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AMERICAN GAS JOURNAL

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Established 185? Pioneer of the Gas Industry

Manufactured and Natural Gas.

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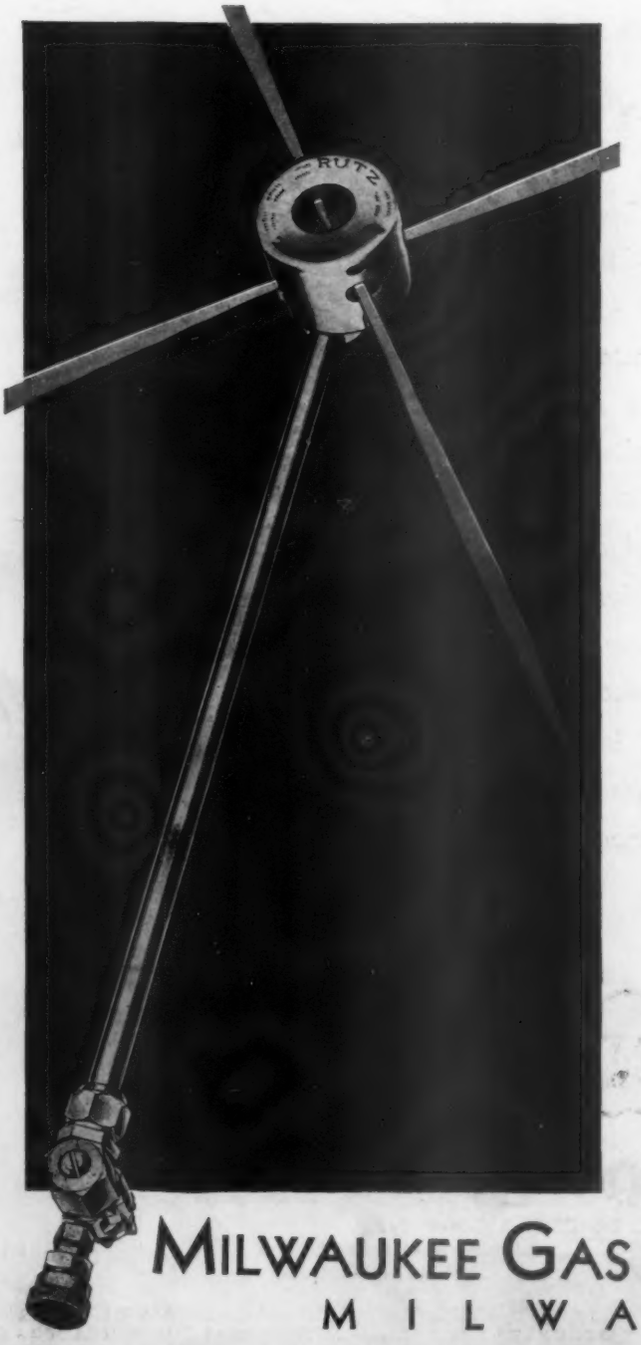

When CHANGING from manufactured to MIXED GAS

Natural gas mixed with manufactured gas . . . this new combination fuel means changed operating conditions. But there will be no lighter troubles with Rutz Mixed Gas Lighters. They are easily adaptable to mixed gas . . . just a turn of the adjusting nut and they are "all set."

The RUTZ MIXED GAS LIGHTER

In fact, any Rutz Lighter already in service may be equipped, at a small cost, with the simple, new part necessary to give safe, easy, positive operation with mixed gas.

• Get the details. WRITE •

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MILWAUKEE

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The 1st...

The First Walking Beam Tin Plate Normalizing Furnace is an SC installation

The First Continuous Gas Carburizing Furnace is an SC installation

The First fully automatic Lead Hardening Furnace is an SC installation

The First Walking Beam Sheet and Pack Furnace is an SC installation

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Largest Metallic Recuperator in use with a Continuous Furnace is an SC installation

..And the largest Heat Treating Furnace in the world is an SC installation

These actual achievements tell the story of SC leadership far more graphically and convincingly than thousands of words about our development laboratories... about our standing... or about the service our engineers are prepared to give in meeting the needs of industry for superior fuel-fired heating equipment. ¶ Each of the above installations is completed. Each is successful. Each is effecting operating economies every day.

Surface Combustion

OPERATED BY HENRY L. DOHERTY & COMPANY

Surface Combustion Corporation
Toledo, Ohio

Sales and Engineering Service
in Principal Cities

Also makers of... ONE-WAY FIRED SOAKING PITS...BRIGHT ANNEALING FURNACES...SLAB AND BILLET HEATING FURNACES...MANTLE RECUPERATORS...AND INDUSTRIAL UNIT HEATERS

AMERICAN
GAS JOURNAL
Established 1859 — *Pioneer of the Gas Industry*

Manufactured and Natural Gas

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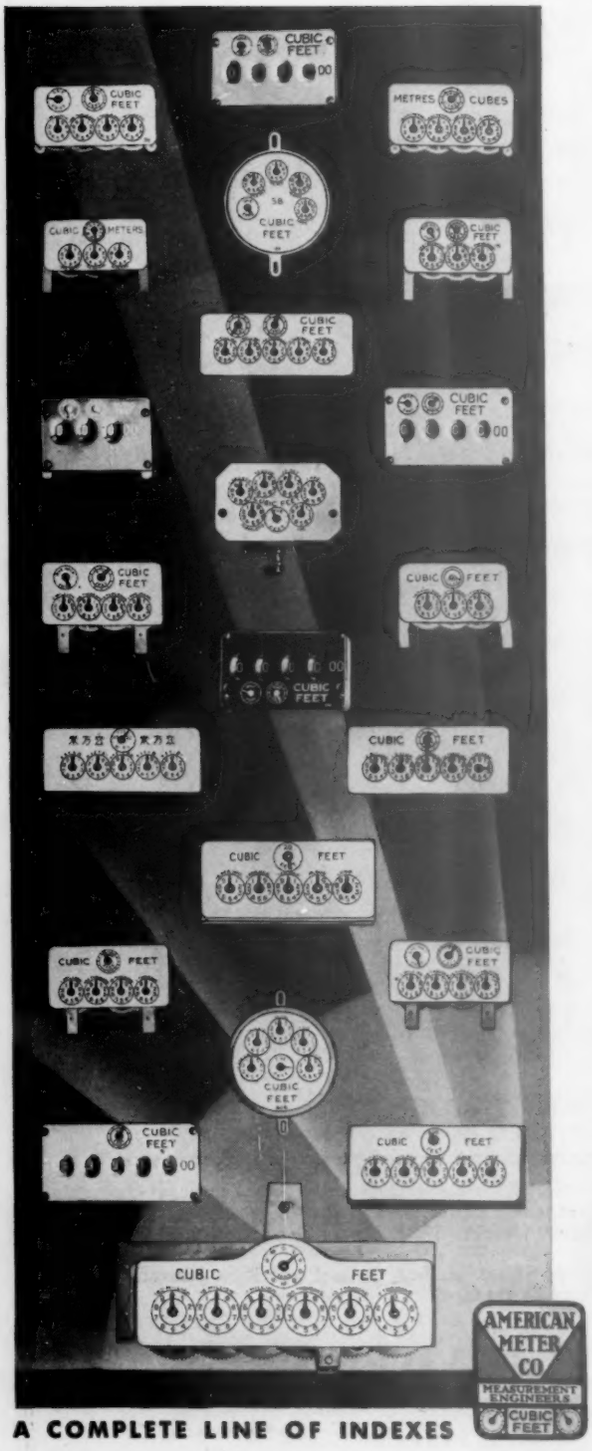
53 Park Place, New York

UNEQUALLED FOR STURDINESS AND ACCURACY



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INCORPORATED
The World's Largest Manufacturers of Gas Meters and Allied Apparatus
ESTABLISHED 1836
GENERAL OFFICES: 105 WEST 40TH STREET · NEW YORK

BUDGETING!

Extensions Replacements Improvements

This is the season when studies for plant expansions or changes are being made.

At this time annually, many organizations call upon us to assist in preparing outlines for study purposes. We offer the facilities of our entire organization—experienced in designing, constructing and operating—to aid you in selecting and laying out equipment that will meet today's need for economical, trouble-proof operation.

No matter how large or small may be your program for 1932, we are at your service to help develop it to your satisfaction. Please consult us freely.

SEMET-SOLVAY ENGINEERING CORPORATION

40 Rector St. **New York, N. Y.**

PROGRESS

—EVEN IN 1931!

In spite of existing conditions, the number of Liquefied Petroleum Gas plants in operation showed a large increase during the past year. New methods of utilization, new equipment, and new appliances have been developed. There has been real progress in 1931.

•

The present time, due to decreased material and labor costs, offers unusual opportunities to increase profits through the development of new properties and the conversion of old unprofitable plants.

•

Liquefied Petroleum Gases should be fully considered in your 1932 program. We will be glad to furnish information and data which will enable you to determine potential earnings and reduction of costs.

•

GAS MANUFACTURING DIVISION

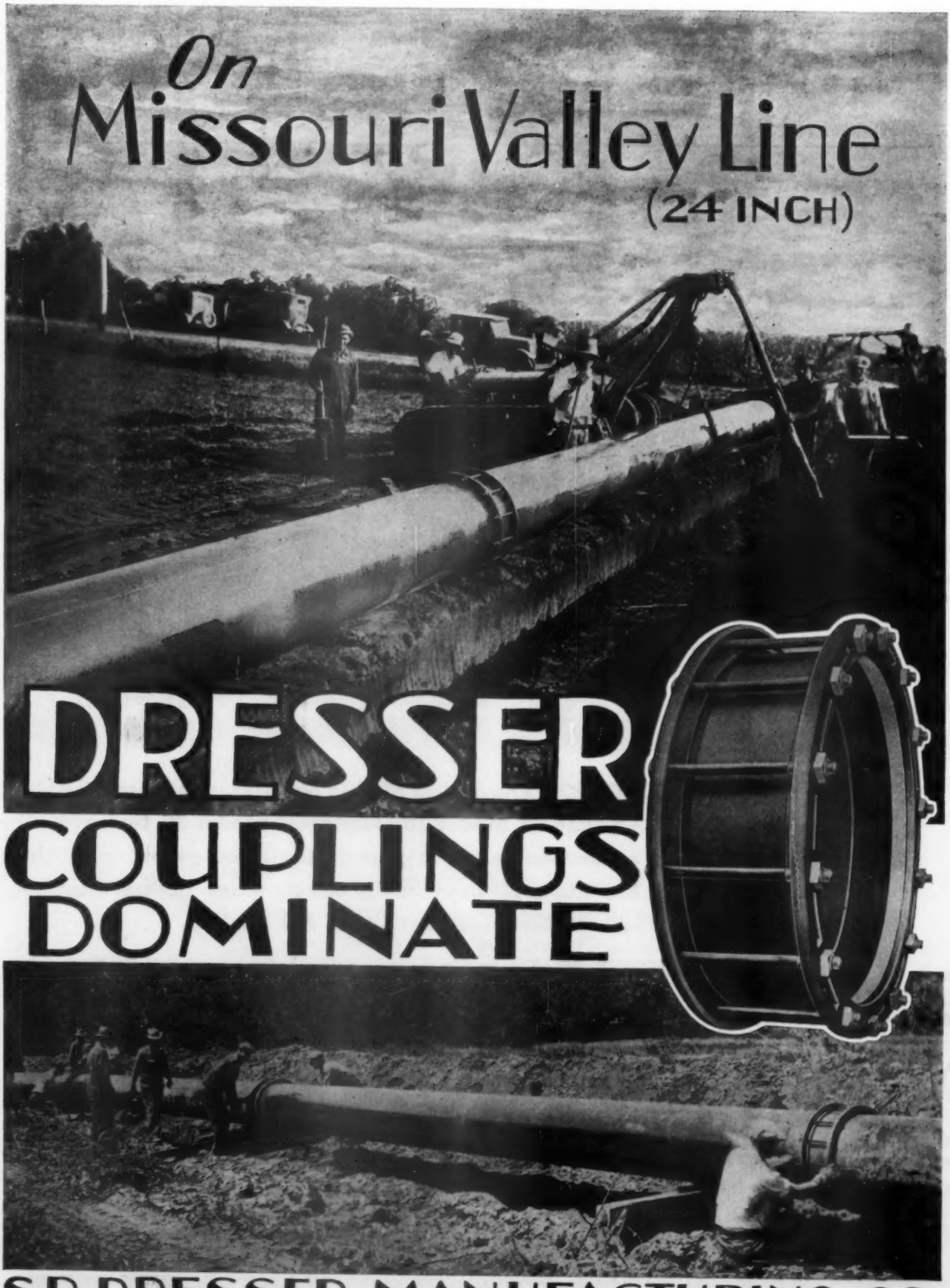
PHILGAS COMPANY

(FORMERLY PHILFUELS COMPANY)

(SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY)

7-101 GENERAL MOTORS BLDG.

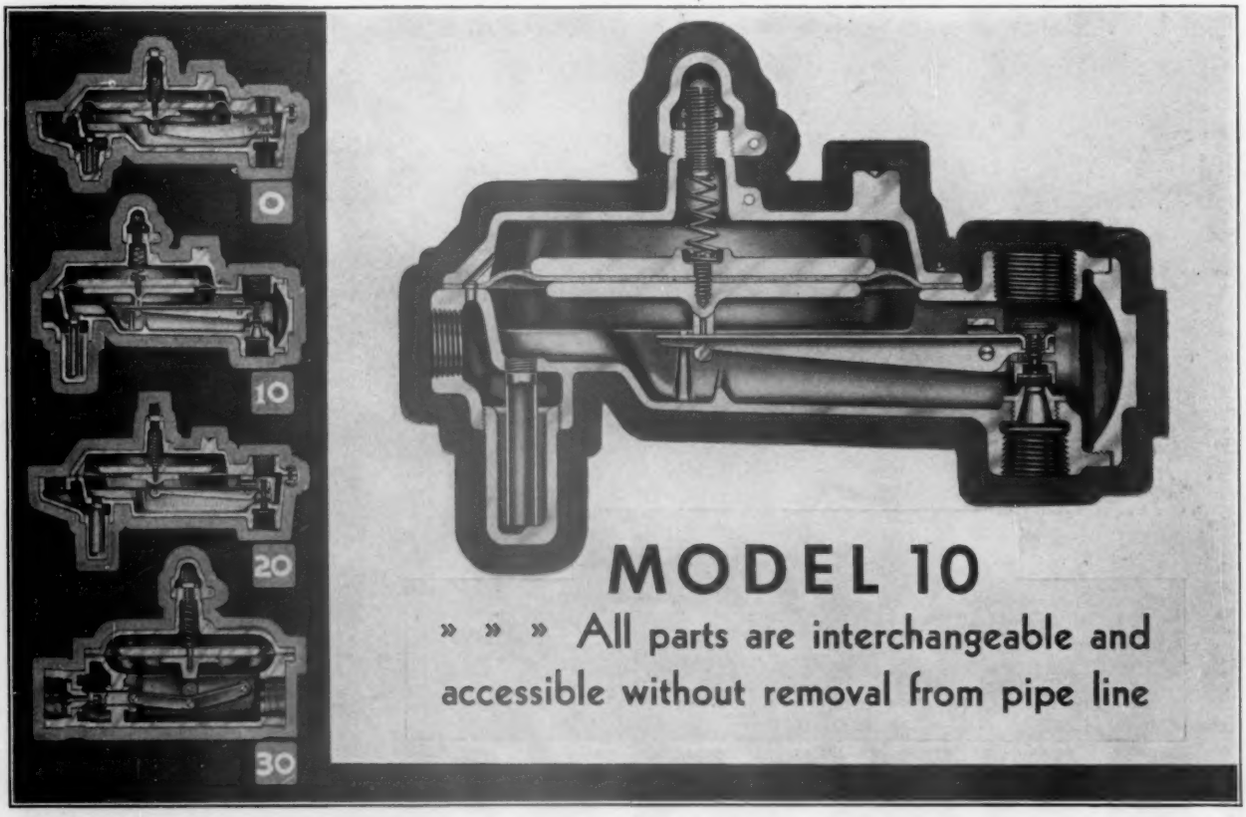
DETROIT -:- -:- MICHIGAN



S.R. DRESSER MANUFACTURING CO.
BRADFORD, PENNA.

Reynolds 4 Service Regulators

. . . each built for a specific need



● **MODEL 20—The design of this Regulator is primarily the same as that of Model 10. However, Model 20 features all parts so accessible as to permit interchangeability in the shop. The material used in the construction of this Regulator, as in all Reynolds Units, is of A-1 quality.**

● **MODEL 30—Features toggle type lever control. It is made in seven styles for any service requirement.**

● **MODEL 0—With or without Mercury Seal. The old standard; has served successfully for more than a quarter-century.**

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Eastern Appliance Co.
Boston, Mass.
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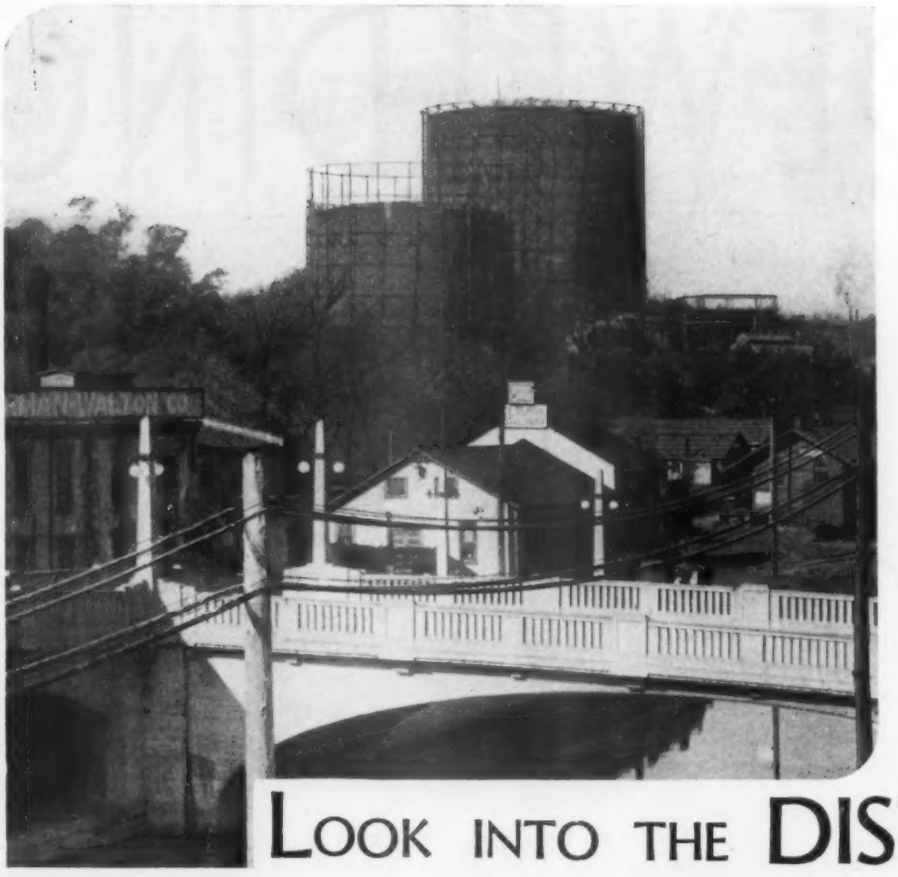
● **REYNOLDS PRODUCTS FOR ALL KINDS OF PRESSURE REDUCTIONS—FOR EITHER ARTIFICIAL OR NATURAL GAS**

GOVERNORS—Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street. **REGULATORS**—High Pressure Service, Low Pressure Service, Intermediate Pressure, High Pressure Line, Single and Double District Station. **VALVES**—Automatic Quick Closing Anti-Vacuum, Relief, Cut-Off. **SEALS**—Mercury and Dead Weight.

REYNOLDS GAS REGULATOR COMPANY
ANDERSON, INDIANA, U.S.A.



LOOK INTO THE DISTANCE TO SEE GOOD GAS HOLDERS

Distance of space is useful in the illustration above in that it enables us to show together a group of Cruse-Kemper Holders, including a recently completed Holder of 10,000,000 cu. ft. capacity.

But it's the distance of *time* that we would have you keep in mind. The Holders shown are built to do their work so faultlessly over a period of many years that low-cost service will repay the purchaser for choosing Cruse-Kemper quality.

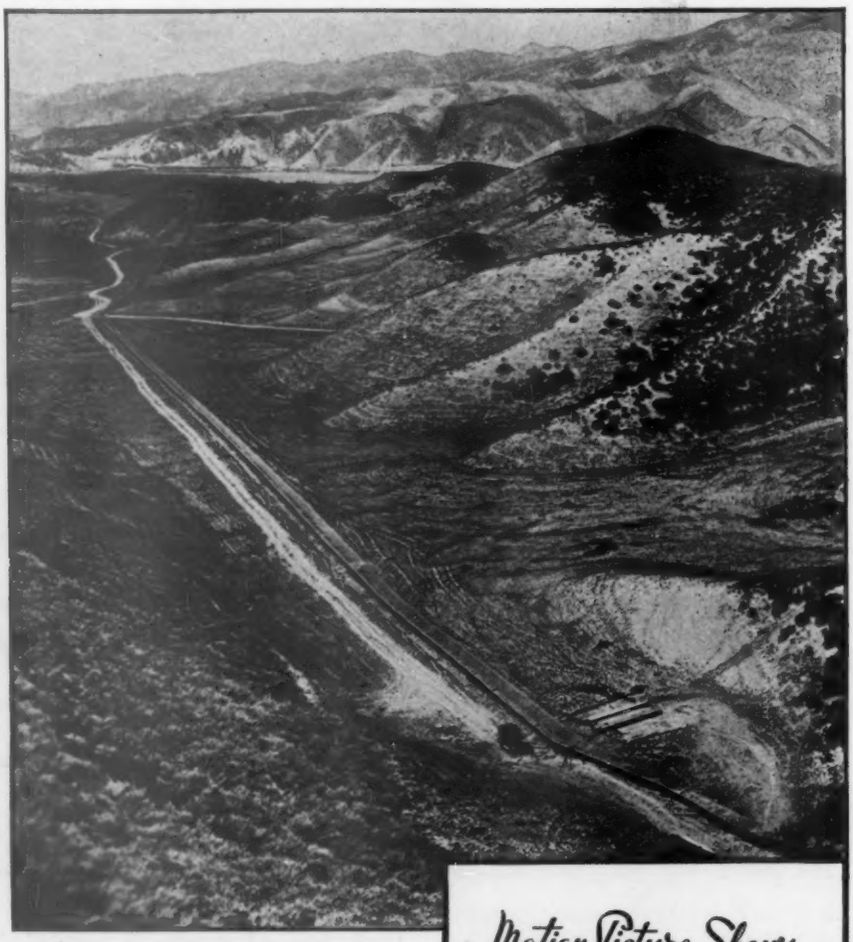
Manufacturers of GAS HOLDERS and other major equipment units for the GAS INDUSTRY

CRUSE-KEMPER CO.

AMBLER, PA.

LINDEWELDING

brings contractor more business



A contractor using Lindewelding on a 29-mile section of 8-inch oil line completed his part of the job so far ahead of schedule that the oil company gave him 51 additional miles to do.

Lindewelding means greater profits for any contractor because it makes high-strength joints 30 to 60 per cent. faster and with 35 to 40 per cent. less welding material.

Experienced welders quickly adapt themselves to this new method of oxy-acetylene welding, and beginners learn it more readily than other methods. It can be done with an ordinary blowpipe or with special apparatus which further increases speed by making the welding almost automatic.

Procedure Controls for Lindewelding are available to all users of Linde Oxygen. If faster welding, lower costs, and stronger joints would win more business and bigger profits for your company, ask our nearest district office for complete information today.

Motion Picture Shows details of Lindewelding

Lindewelding technique differs from neutral flame welding technique in that it employs a special rod, a special flame adjustment, and the "back-hand" method of blowpipe manipulation. The actual steps in making a Lindewelded joint are shown in our motion picture, "The Lindeweld Process for Pipe Line Construction." This picture will be loaned without charge to pipe line officials and welding or engineering societies. It is furnished in 16mm. and 35mm. safety film and can be obtained by writing to any Linde District Office.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

126 Producing Plants UCC 627 Warehouse Stocks

IN CANADA, DOMINION OXYGEN COMPANY, LTD., TORONTO

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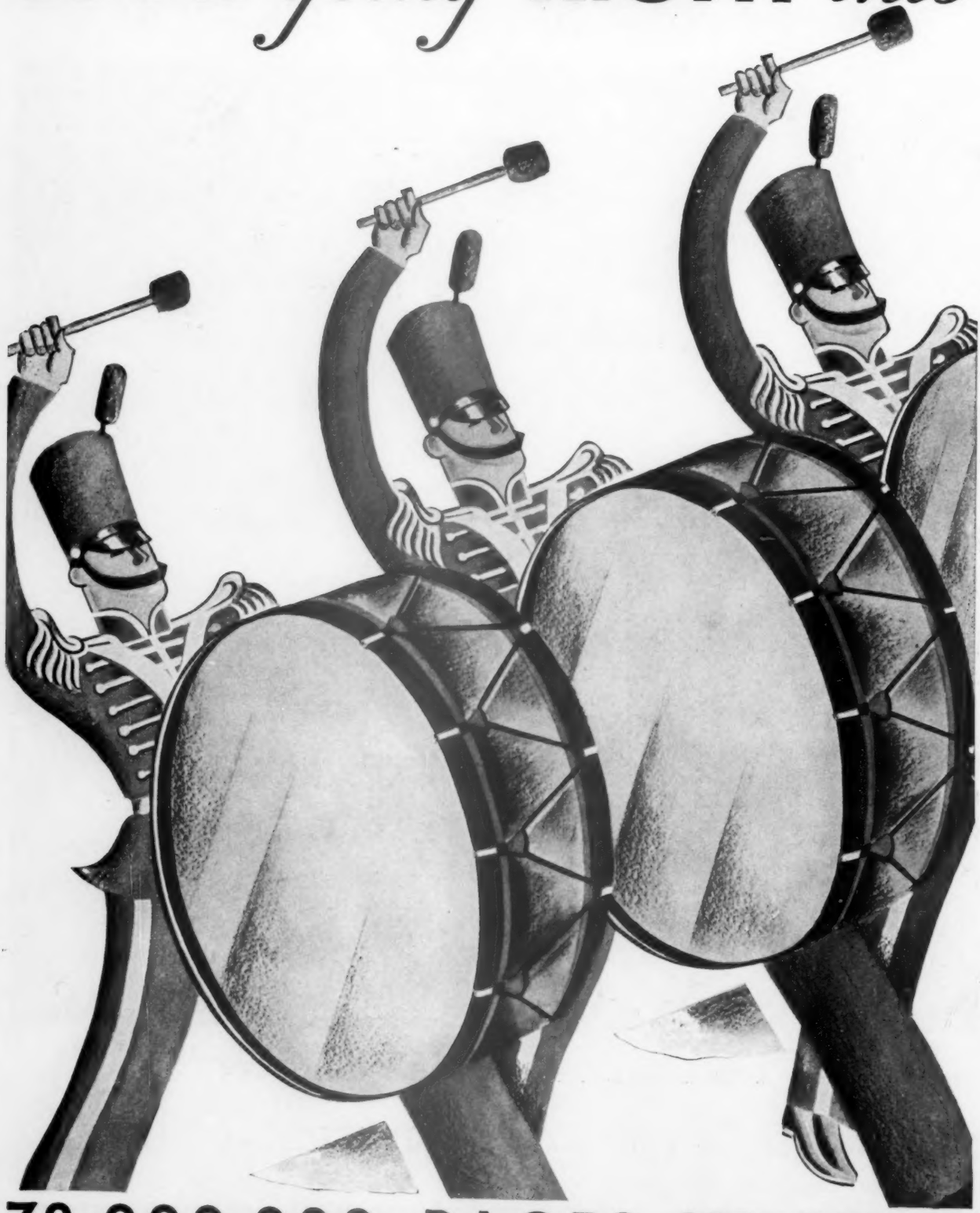
LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES • UNION CARBIDE

PIPE LINE CONSTRUCTION
anywhere—under any conditions

THE U. G. I. CONTRACTING COMPANY
DIVISION OF
UNITED ENGINEERS & CONSTRUCTORS INC.

Philadelphia—112 North Broad Street Chicago—Conway Building

We're going **RIGHT** *into*



78,000,000 PAGES IN FOUR

YOUR TOWN *in* 1932

with the most intensive

ELECTROLUX

Advertising Campaign

ever put on!

EACH MONTH, thousands of families right in your town will read the new, ARRESTING story of Electrolux. Families who are YOUR CUSTOMERS. Families who each month purchase some of your products. Families who have money and CAN BE SOLD an Electrolux.

A tiny gas flame takes the place of all moving parts.

Read these figures. They give in exact numbers the support you can expect from Electrolux advertising in YOUR TOWN in 1932.

Each month, Electrolux advertising will go into the homes of:

1 out of every 4 families in towns of over 500,000
1 out of every 3 families in towns of over 100,000
1 out of every 3 families in towns of over 50,000
1 out of every 4 families in towns of over 25,000
1 out of every 4 families in towns of over 10,000

What are the magazines? SATURDAY EVENING POST—foremost weekly home magazine of America. COLLIER'S—another all-family favorite. TIME—a great news-magazine, read by influential, up-to-date men and women. GOOD HOUSEKEEPING—the "trade paper" of the housewife; bought and read by her for the reliable last-minute information it gives on household matters.

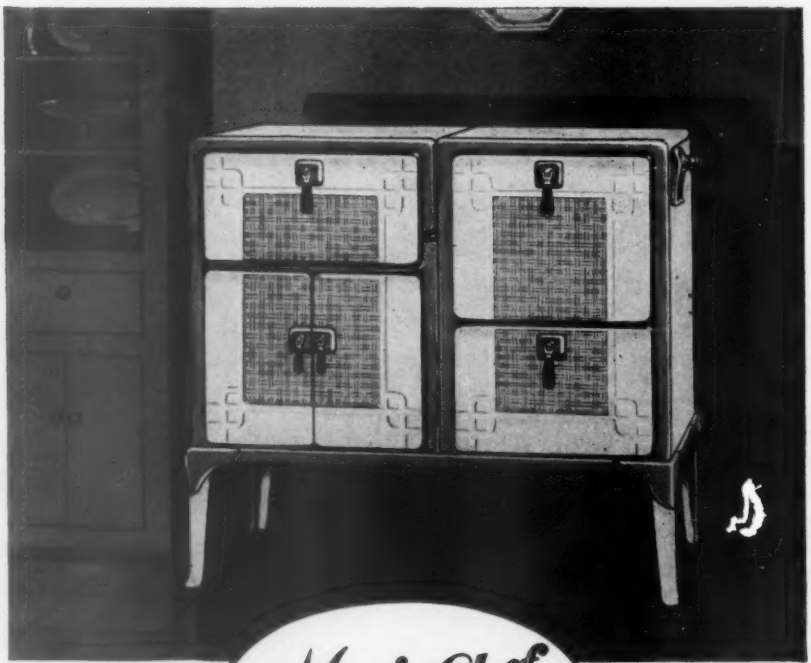
Also, there will be full-page advertisements each month in INFLUENTIAL BUSINESS PAPERS . . . reaching the architects, builders and owners with whom you want to talk "gas refrigeration."

Let us help you follow up—capitalize—this barrage of Electrolux advertising this year. Get in touch at once with Electrolux Refrigerator Sales, Inc., Evansville, Ind.

IMPORTANT HOME MAGAZINES!

The NEWEST MAGIC CHEF

SERIES 600



Patents Pending

Magic Chef
AMERICAN STOVE COMPANY

Look For This Trade Mark

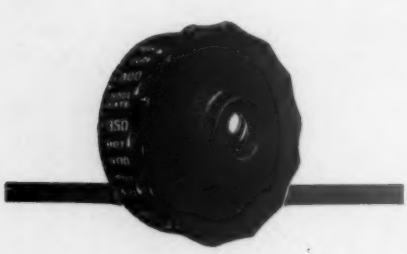
In price and type of gas range, the Series 600 Magic Chef bridges the gap between the top of the line and the popular-priced Series 500.

This newest Magic Chef is extremely handsome and imposing in design and decoration. Its color scheme of Old Ivory with two tones of green for trim and panels of Cocoa-Brown basket weave is decidedly pleasing and will harmonize with every kitchen.

With ample cooking capacity for a large family, Magic Chef Series 600 is built for utmost convenience and efficiency.

Special features include the Red Wheel Lorain Oven Heat Regulator, three-in-one non-clogging top burners, Magic Chef top lighter, new type high burner tray, cabinet type cooking top cover which, when closed, conceals the manifold and protects gas valve handles against meddling, roomy service compartment with wide partitioned drawer, patented reversible broiler pan and fully insulated oven and broiler.

With the addition of Magic Chef Series 600, the Magic Chef dealer now has a complete line, nationally advertised, that satisfies every gas range buying requirement and provides every advantage needed to overcome competition.



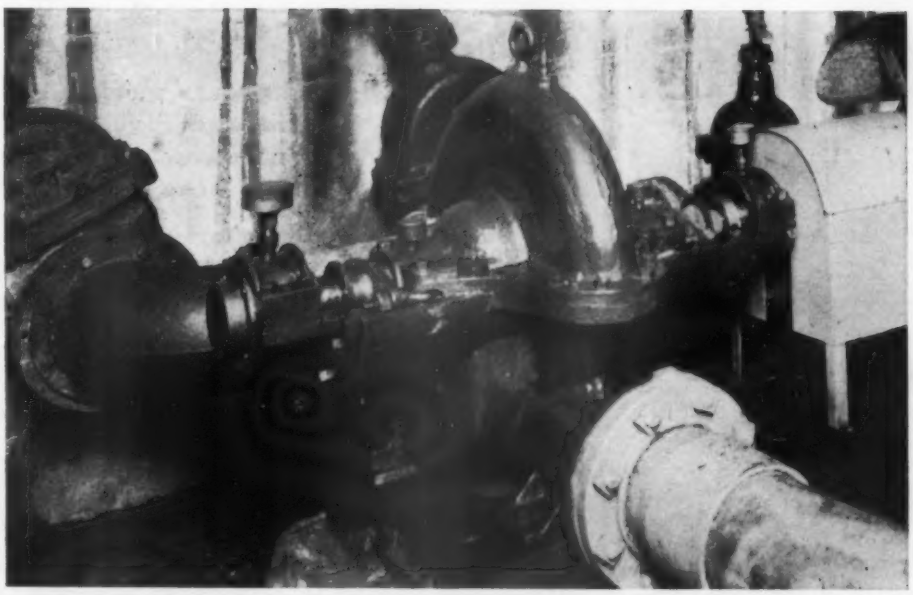
Look for the RED WHEEL
When you buy a MAGIC CHEF

AMERICAN STOVE COMPANY

World's Largest Manufacturer of Gas Ranges

NEW YORK · PHILADELPHIA · ATLANTA · CLEVELAND
CHICAGO · ST. LOUIS · LOS ANGELES · SAN FRANCISCO

WHAT DO YOUR PUMPS COST?



ROOTS-CONNERSVILLE
- Blowers
- Gas Pumps
- Boosters
- Exhausters
- Pumps
- Meters

STACEY
- Stacey-Klonne Dry Seal Holders
- Telescopic Holders
- "Bullets"
- Purifiers
- Stacks
- Tanks
- Penstocks

IDECO
- Standard Steel Buildings
- Gas & Oil Drilling & Pumping Equipment
- Electric Power Transmission Equipment

ARE you getting the utmost efficiency from your present pumps?

The first cost of a pump does not represent the actual value—efficiency, service and low maintenance are of major importance.

In the Hayton centrifugal pump, the absence of wearing rings eliminates the chief source of constant maintenance trouble, insures continuous dependable operation avoiding frequent shut-downs, and keeps maintenance cost low.

The Hayton pump is attracting the attention of engineers throughout the industry. If you do not have our literature, send for it.

(HAYTON CENTRIFUGAL DEPARTMENT)

ROOTS-CONNERSVILLE-WILBRAHAM

DIVISION OF INTERNATIONAL-STACEY CORPORATION
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CONNERSVILLE, INDIANA

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U. S. de Lavaud Pipe

During the past eight years, more than 10,000 miles of deLavaud Pipe have been specified by engineers and contractors in cities throughout the country.

DeLavaud Pipe is light in weight; easy to cut and tap. And tests have proved that it is at least 25% stronger than good pit cast pipe.

The deLavaud Handbook gives complete details and specifications. For free copy address: United States Pipe and Foundry Co., Burlington, N. J.

Sales offices located in the following cities: New York, Philadelphia, Pittsburgh, Cleveland, Buffalo, Chicago, Dallas, Birmingham, Kansas City, Minneapolis, Seattle, San Francisco, Los Angeles.

Our pipe bears the "Q-check" trademark of The Cast Iron Pipe Research Association

Illustration shows the deLavaud machine in action.

When the Day's Work is Done . . .

IT'S DONE!

The **TAMPER—BACKFILLER** *keeps the front and rear of your job close together*

. . . and it's a mighty cheap form of public liability insurance

IF you are keeping pace with modern construction methods you will readily appreciate the definite need for the Cleveland Tamper-Backfiller on your work.

Here's a compact machine, crawler-mounted and built to Cleveland Trencher Standards of quality, which speedily and adequately completes the pipe-laying job, with permanent results and minimum expense. Its special pneumatic-tired trailer guarantees low-cost speedy transportation from job to job.

The tamping unit swings so as to tamp at either side of the machine while moving parallel to the trench, or in the center while straddling it; striking a 380 foot-pound blow 45 times per minute. On the same chassis is a fast backfilling unit of the drag-line type, with adjustable telescopic boom. One-man operated, tamping and backfilling can be done simultaneously.

Accidents due to open trenches and sunken backfills are practically eliminated with the Tamper-Backfiller, while tamping and backfilling costs are brought to a new low level.

Certainly, a piece of equipment worthy of a place on your work and deserving of your inquiry.

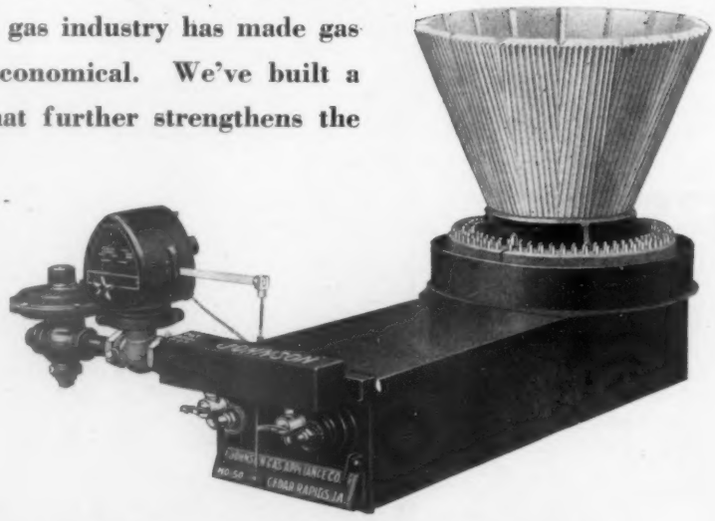
THE CLEVELAND TRENCHER COMPANY
"Pioneers of the Small Trencher"
20100 St. Clair Ave., Cleveland, Ohio

Write for full information

THE CLEVELAND TAMPER-BACKFILLER

WE'VE TALKED TO GAS MEN—

And the more we hear, the more we become enthused about gas home heating. The gas industry has made gas home heating practical and economical. We've built a line of conversion burners that further strengthens the position of this new heating method. You know about the Gas—we would like to tell you about the Johnson line of burners. Write now for full information. No obligation of course.



JOHNSON GAS APPLIANCE Co.
Cedar Rapids JOHNSON PATENTED DIRECT JET **IOWA**

Eastern Representative: R. M. Henshaw & Co., 250 Stuart St., Boston, Mass.

RE-CHROME and OIL METER LEATHERS

for **TIN** *and* **IRON METERS**

ALSO

FOR REGULATORS *and* **GOVERNORS**

Re-Chrome Tannage has passed the experimental stage and is a proven fact. Since the earliest installations Re-Chrome Leather has made lasting friends among a number of leading gas companies in the United States.

Actual service tests have been going on for *seven* years under all operating conditions and the results show that *Re-Chrome Leather* insures longer life and lower repair costs.

BESSE, OSBORN & ODELL, Inc., 51 South St. Boston, Mass.

N. Y. Representatives—G. N. Bankart & W. A. Smith, 177 William St., N. Y. City

GAS-TIGHT Mechanical Joints

Every engineer knows tnat wherever a moving part enters a pressure chamber the "stuffing-box" principle is universally applied to prevent leakage. This fundamental principle is embodied in several mechanical joints with rubber gaskets and follower rings, made by members of The Cast Iron Pipe Research Association. It is not an untried principle as applied to cast iron pipe for high-pressure lines. Mechanical joints employing the *stuffing-box principle* have been in successful use for a number of years. Tests demonstrate that these joints are gas-tight under pressures and conditions more severe than those ordinarily found in gas distribution. For further information, write to The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 309 Peoples Gas Building, Chicago, Ill.

CAST IRON PIPE

BAROMETERS

PHILADELPHIA, THE WORKSHOP OF THE WORLD
has 14,000 Manufacturing Establishments of which many have World-Wide Reputations.

"PRINCO" STANDARD FORTIN MERCURIAL BAROMETERS

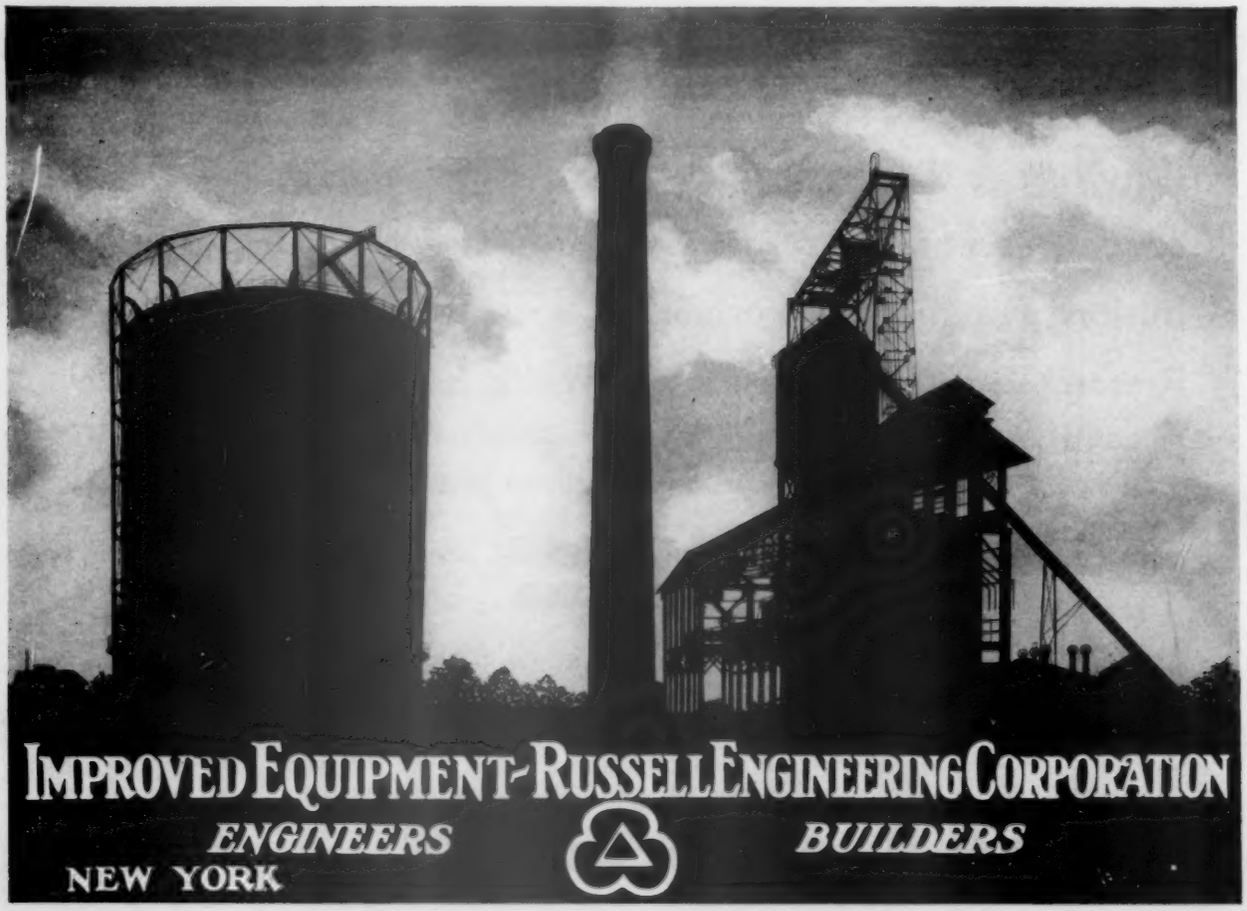
are in World-Wide use because they, too, have a "World-Wide Reputation"

THEY ARE GOOD BAROMETERS
THEY ARE REASONABLE IN PRICE

For more than a decade they have been made in such manner that they can be shipped safely and successfully wherever there is a common carrier. This has been recognized as an achievement in Barometry.

PRECISION THERMOMETER & INSTRUMENT COMPANY

1439 BRANDYWINE STREET - - - - - PHILADELPHIA, PA.



Comforts We Cherish

Folks never will lose their fascination for the glow and cheery comfort of a grate fire. Homes never seem complete without a fire to draw the family circle close together. And of course, in modern homes the dirt and fuss and smoke of wood fires should be replaced with quick, clean Humphrey Radiantfires.

Take the basement club room above for example. A smoke-blackened dingy wood fire-place would mar its beauty, but the Humphrey Insert Model Radiantfire of stainless steel added charm and put the warm glow of a cheery fire where none had been before.

We hardly need to remind you every Humphrey Radiantfire installed means a permanent increase in gas demands, but maybe we should remind you oftener that only through Humphrey Radiantfires can you supply the homes within reach of your gas lines with real everlasting quality in radiant heaters.

Insert Models, like the ones illustrated, can be sold every day in the year not only for new homes but for modernizing old homes. And Humphrey Stainless Steel Insert Models are genuine stainless steel in its natural permanently beautiful lustre. Send for our latest catalog.

No. 570 Stainless Steel

No. 570 Etched Stainless Steel

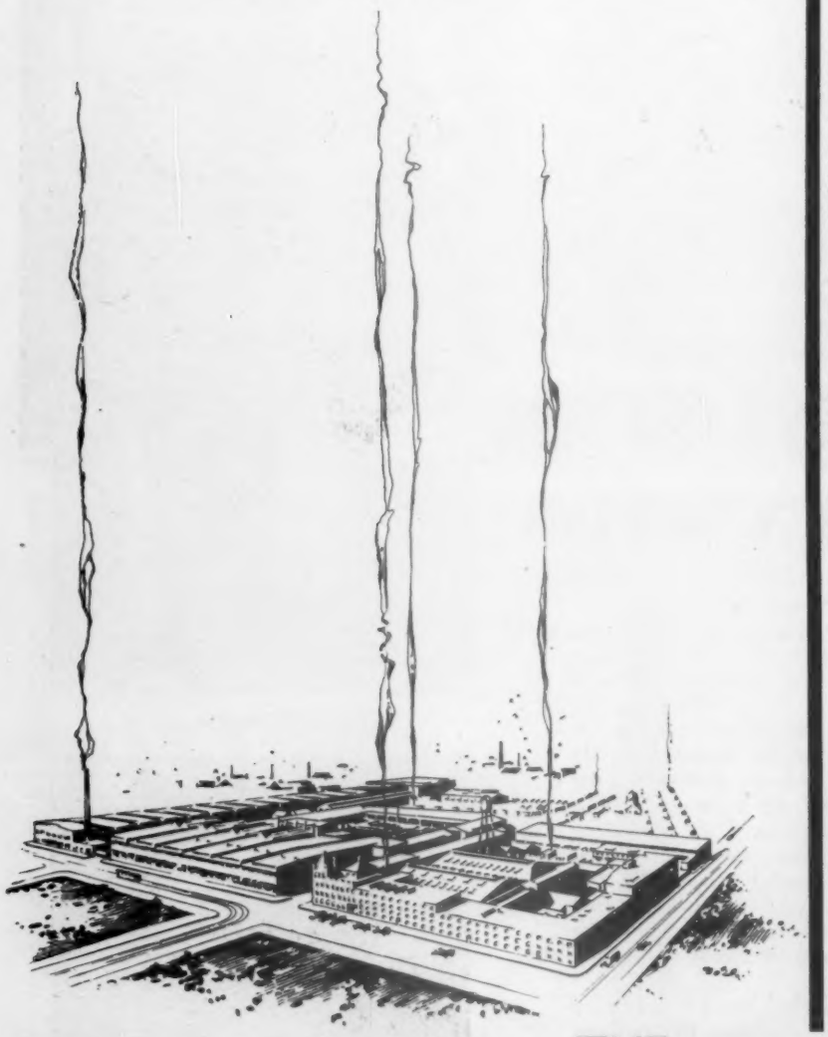
The HUMPHREY Radiantfire

General Gas Light Company

Kalamazoo, Michigan

44 West Broadway
New York City, N. Y.

135 Bluxome Street
San Francisco, Calif.



1932 marks the One Hundredth Anniversary of The Bartlett Hayward Company, who are happy to have contributed a small share to the finer traditions of American Industry.

Hayward & Friend, from an extremely modest beginning, gradually evolved, after a number of years, to The Bartlett Hayward Co., who with its predecessors were pioneers in the field of heating and ventilating of large buildings, in the manufacture of machine-cast iron pipe, as well as a score of other fields which since have become firmly established.

Untiring in its efforts, deliberate in its choice, persevering in its labors, The Bartlett Hayward Co. has striven to constantly pioneer; the most recent example being that of the M.A.N. Waterless Holder in this country.

THE BARTLETT HAYWARD COMPANY

BALTIMORE **MARYLAND**

Coal Gas, Carburetted Water Gas, Blue Water Gas, By-Product Plants—DeBrouwer Charging and Discharging Machines—Waste Heat Boilers—Purifiers—Condensers—Tar Extractors—Thickening and Filtering Equipment—Feld Scrubbers—Fast's Couplings—Tanks—Gas Holders.

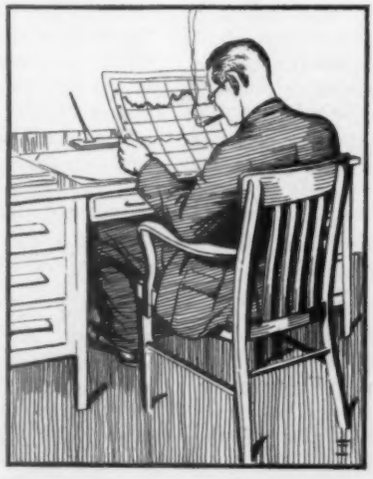
AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900

HENRY M. RILEY, Editor

Statistics and Trends

A STUDY of the latest "Monthly Summary of Gas Company Statistics," issued by American Gas Association in December, brings out trends that are both vital and interesting. These figures show that, for about the first time over a period of years, the total number of customers has suffered a slight decline; a glaring testimonial to the severity of the present depression. Evidently there has been considerable doubling up of families to partially accommodate living expenses to a shrunken income.

The number of househeating customers has increased by a very healthy increment, all of which leads to the deduction that househeating by gas is not entirely a luxury—the public in general is not overhasty in spending for luxuries during a business let-down. Despite this large increase in the number of househeating customers, the gas output for this phase of utilization declined appreciably. The answer to this seeming inconsistency is that winter temperatures have been abnormally high throughout most of the United States.



While industrial gas utilization has shown an expected falling off in consumption, a number of companies, particularly in manufactured gas territory, have added surprisingly to their total of customers. This augurs well for the future; however, as we increase our industrial business, we will have to take our chances with the rise and fall of the general business tides.

In view of this temporary arrest in our business we might well ponder as to whether we can gain any comfort both as regards the immediate present and the future. Emphatically, we can. Our industry is soundly financed and exceedingly well manned. We enjoy a friendship with our customers that is about all that can be desired. Our well laid plans tell us definitely where we are headed. The gas industry has suffered but slightly in comparison with other businesses. But, best of all, we are optimists of the first water. Accordingly, let us augment and perfect our advertising and selling activities. Let us painstakingly study our technical procedure so that when the dawn of a new era of prosperity breaks we can truly appreciate that the poet who said "the best is yet to be" was a prophet par excellence.

Some New Phases of Gas Management Problems

Weighing the novel social characteristics of depression and programming wisely the company effort of the New Year

R. S. McBRIDE,

Consulting Editor, AMERICAN GAS JOURNAL

NEW YEAR'S resolutions are soon broken by those who make them casually. But sound plans for the New Year made and pursued thoughtfully are of great value to an industry or to an individual company, quite as much as are New Year's resolutions when taken seriously by the individual.

The gas industry needs for 1932 a new and broader plan. It should rest on a scientific base more widely spread than any which has thus far been used. To rise above the level of mediocre industry it may well mount on a higher tripod, the three supports of which would be improved technology, better economics, and sound social science.

WHAT has social science to do with gas engineering? This is a question that may well arise in the mind of the reader who thinks of gas supply as essentially a technical business. And it is a question that has not been often enough considered either by management officials in general company programs or by individual workers in the industry as they pursue their more or less routine tasks.

America has advanced ahead of the rest of the world by sound economic planning with aggressive and unexcelled technology. Industry in America has produced more efficiently, more rapidly, and on a larger scale. Goods of all types have become abundant at constantly declining costs, but still we suffer from ineffective human relations. The past two years have demonstrated that our national system has inadequately recognized the equal importance of social science as the third leg to support our national affairs.

This situation is going to be changed. Any industry, any corporation, any business executive making plans for 1932 who fails to take account of the tremendous importance of impending social development is doomed to disappointment. Nineteen thirty-two will be but the opening of an era of social readjustment quite as marvelous and quite as fundamental as has been the technologic development of the past decade. It is worth while, therefore, for the gas industry as a whole and for each corporation in the industry to make a careful study of this change and of the significance which it has locally and nationally for gas.

A POLITICAL CONSEQUENCE of periods of depression is apt to be radical legislation. The year 1932 is not likely to be an exception. Fortunately, however, our industry has more or less consciously been developing an appreciation on the part of the general public that gas is an essential of modern urban life in which the interests of investor, management, and customer are more or less identical. A further emphasis on this mutuality of interest is important. Mere words, however, will not suffice. Clean-cut positive evidence, through sound administrative actions on the part of each company management, will be the only way of convincing the public that this relationship is recognized.

The introduction of natural gas into many areas hitherto supplied along conventional lines with manufactured gas has created a number of pressing problems. With the acceptance of natural gas, a great many companies have been able to offer more favorable rate schedules to the public and thus have shown that the development of the new supply has advantage directly measurable by the customer. Wherever such adjustments have not yet been made but are feasible of accomplishment without undue restriction of company earnings, they should be made voluntarily. To await the time when such changes must be made under compulsion of state commission orders or after the clamor of political demagogues, will place the credit for adjustment with those very disturbing influences in the community which should at this time have their power curbed rather than increased.

THE PRESENT PERIOD is one of restricted earnings. The public-utility companies have not suffered loss in net income as heavily as others. They are, therefore, a bright and shining target for the political spell binder. It will be hard, indeed, to convince even the man who usually is of open mind that a company which continues to pay generous dividends during the period of depression has done its share in the community effort.

Managements may, therefore, in some cases find it well to sacrifice some measure of immediate profit by speeding up more than normally the lowering or readjustment of rate schedules. If they by such means can gain a substantial amount of good new business over a period of the next few years, this gesture of community cooperation will return in future rewards much more than the immediate small cost in slightly curtailed earnings. Anyone who knows the industry and who views its problems fairly cannot believe that price cutting generally is to be expected or desired. But there are apparently a few cases in the industry where such action as has just been suggested would have very ma-

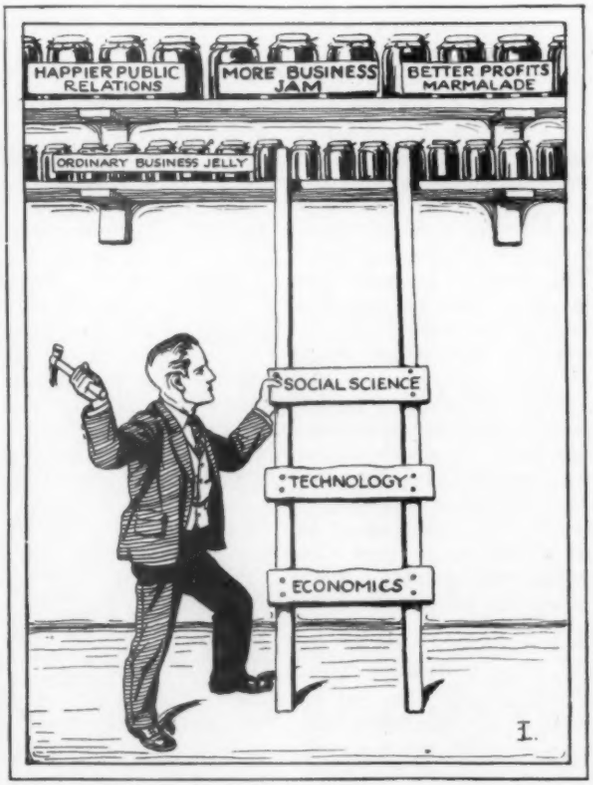
terial advantage, even to the stockholder in the long run.

HOLDING COMPANY problems give evidence of being acute during 1932. In a few cases these problems will center on the questions of readjusting financial structures in the period when any flotation of securities imposes a serious burden on management. More often, fortunately, the problems will be purely those of economic planning and public-relations development. In the latter group of problems an absentee management works at peculiar disadvantage. It is essential, therefore, that general executives at this time take careful account of the needs of their local managers. Under many circumstances it will be wise to accord more than usual authority to the *local* officials of a company. By this means it will be made evident to politicians, business men, and the general public of the community served that their local company manager is one of real authority, quickly responsive and fully sympathetic in handling questions of local needs.

The present period of business difficulty has been most fortunately free from labor disputes and controversial difficulties of all sorts. This happy situation has probably come about more because of the better understanding existing between the several elements in complicated modern society. Gas companies should recognize that an understanding community seldom, if ever, is unreasonable. Very sincere effort must, therefore, be made, not casually, but as an important job of management, to create an understanding locally of the problems of each utility enterprise.

It is suggested that in many communities the naming of an advisory council on the part of the local gas utility may be desirable. On such a council can well be included a number of the influential and progressive business men of the community, a straight-thinking progressive banker, several men of professional standing, such as lawyers, doctors, engineers, and others who in their several fields are locally recognized as men of capability. If a local management will ask a small group of such men to meet with it occasionally it will afford an opportunity to find out what the thinking people of the community would like to know about their gas company. It will afford also a convenient opportunity to spread frankly before these men the problems and perplexities of the company. It will shortly develop on the part of the general public an increasing measure of conviction that the gas company has nothing to hide and therefore cannot be such a terrible creature as it is often accused of being by local political demagogues.

It is not wise to wait for the organization of such an advisory council until controversy or threatened legislation has actually arisen. At such a time the public more or less rightly looks with suspicion upon any new creation of the company itself. It quite naturally wonders whether this is not some form of subterfuge by which to convince against their judgment the outstanding men of the community. Erected as a protective device such advisory group has comparatively little usefulness. Created in times of friendly relations it becomes during a subsequent period of stress an invaluable means of public cooperation.



NEW TYPES of social problems, though pressing and important, have not done away with the old question of engineering and economic nature. There still remain the same difficulties of determining sales policies and in the securing of new types of gas users, that have been with us during all the past decade. Indeed, these problems of merchandising have been made even more difficult by the very fact that most prospective customers have now even greater than usual difficulty in arranging for new equipment, or new sources of energy supply. Far too many householders planning their new year's budgets must do so with the contemplation of a reduced income. The new gas range, the new gas furnace, and the new equipment of other sorts which they would like to buy become, therefore, less easily provided for than formerly.

Because of this increased difficulty of selling, local managements must select the prospects for their merchandising effort with greater care. Means are available for determining which particular classes of people in any locality have suffered least from the depression. The sales appeal should be made to them particularly. Such selection of prospects should materially reduce the cost of merchandising and increase the effectiveness of the new-business department expenditures.

Also careful selection must be made of the types of goods and services which are to receive major selling effort. The choice must be based in a large measure on the load factor characteristic of the new business which it is hoped can be added. Uses which have year-around base load characteristic are, of course, much to be preferred to seasonal business. And they may be even easier to sell because the billing to the customer will be year-around and thus a smaller amount will be payable each month. On a similar basis great effort should be made to secure even minor utilization connections, such as the pilot lights on oil-fired furnaces. This usage being 24 hours per day accumulates to a substantial total without becoming burdensome at peak-load hours. Furthermore, it extends uniformly seven or eight months

(Continued on page 46)

The Domicilum Commodus Equation

House + Proper Gas Outlets = Home

JUSTIN M. KENNEDY
Southern Counties Gas Company,
Santa Monica, Cal.

A RECENT nation-wide contest for the best short definition of the word "Home" revealed the rather astounding fact that each of the many thousand contributors had a different idea regarding the aggregate factors which when molded together formed the phenomenon, Home. Although there was a consensus of opinion that in a material sense, an abode of at least four walls entered into the formation of this thing called "home," it was surprising how varied were these interpretations of such a fundamental part of our every day existence.

On one point, however, the many contestants agreed —that a "comfortable environment" was indispensable. Persons accustomed to the rare coziness which only a real "home" affords, naturally emphasized the importance of this need. Others, however, whose memories, unfortunately, were incapable of reflecting upon comforts which they had never known stressed this same feature—their hopes and dreams, no doubt, of a Utopia wherein they would find the essence of contentment, health, happiness—and comfort.

If these "home" definers had followed the lines of Noah Webster their contributions would possibly have been more practical and less rhythmical. Instead of generalizing upon the importance of "comfortable surroundings" they would have been more specific, and mentioned such things as connections—those often neglected gas piping outlets which can alone make possible many of those 'home comforts" which come from the proper utilization of modern gas burning appliances.

Part Played by Gas

And yet, is it not possible that in their effort to wax poetic these contributors who might have defined a "home" as "an intimate domestic environment; an abode of permanent security and comfort where pride of possession creates the foundation for happiness, independence and family tradition," intended that the judges should also read between the lines? Because after all, those to whom "home" is a place of "comfort" undoubtedly appreciate the great part that gas plays in making this comfort possible.

A renowned architect when once asked, "Which of your many fine specimens of architecture do you deem the greatest?", replied: "The job I am working on at present." Every task—a masterpiece—what a fine example for every architect, in fact every worker, to follow. Although in this rather hectic, mercenary era, the quest for the almighty dollar occasionally causes even the most ethical to overlook the higher principles, the writer has observed that the majority of those individuals making up the architectural profession are sincere in their intent to make of every new project an example of perfection.

"But," cry the many gas company salesmen, "how about those sales I lost because the prospects' homes were not equipped with the necessary gas connections?" And for anyone who has been forced to swallow a number of life's bitter pills, it is easy enough to sympathize with these complaining salesmen who had failed to get the name on the dotted line because of this unforeseen obstacle—no outlet.

All of which presents another side (but a most important side) of the picture.

Conceding that all architects attempt to present their clients with the utmost in structural beauty, and are indeed conscientious in seeking to provide the maximum conveniences, it is casting no reflection upon their abilities to acknowledge that occasionally homes and other buildings are erected which do not have complete gas piping facilities. In the face of a multitude of important details it is only natural that frequently certain plans are prepared which unintentionally omit apparently insignificant, yet really vital items so essential in meeting the many requirements of the present day resident.

Those in the building profession will readily testify that if they are preparing plans or erecting a home for a particular owner, nine chances out of ten, the omission of even the slightest detail will eventually be "caught" by the hawk-eyes of the "king" or "queen" of that particular domain. For this reason those nomads who claim no one place as "home" but are ever seeking the ideal abode are often better qualified than the home owner to enumerate the paramount features which should not be omitted if the place is to be a "comfortable environment." Unfortunately, some individuals who build "to sell and not to live in," fail to provide all of the features which add to the "livingness" of a particular domicile. In many instances the legitimate renter, who is often accused of preferring to move rather than pay his rent, is only seeking a more comfortable apartment or flat which contains all of the necessities conducive to comfort.

Rovers Force Landlord's Hand

As a result of the development of this peculiar nomadic type, to whom a moving van at the doorstep is something platitudinous, the landlord of today has found it necessary to cater to the whims of the renting public, who like the aspiring home owner now insists on certain basic essentials. . . .Central as well as auxiliary gas heating equipment that not only removes the chill, but maintains automatically a uniform, warm and healthful temperature. . . .Automatic hot water service at all hours of the day and night at the turn of the handle marked "H." . . .Attractive, and efficient thermostatically controlled gas ranges, which permit the preparation of tasteful foods easily and economically with cleanliness and dispatch. . . .Gas refrigeration, too, protecting

foodstuffs silently and inexpensively from the ever lurking bacteria, without the frequent interruptions of mechanical or make-shift systems. . . .Gas equipment for the laundry. . . .Proper elimination of refuse in the gas incinerator. . . .An igniter for the fireplace. These are just some of the gas conveniences that both the home owner and renter demand, because they now appreciate how indispensable these things are in making their abode a "comfortable environment."

With the public thus demanding certain home conveniences, is it sufficient that we in the gas industry merely build our distribution systems large enough to be able to supply the fuel requirements of our consumers? Emphatically NO! Our creed is not "to have and to hold," but "to have in order that we may more better serve." Though this fact may not have been forcibly brought to our attention it is possible that some of our consumers even at this moment are not being properly served, in spite of the fact that we have an unlimited supply of gas. And all because of inadequate gas piping facilities.

If we discover that such conditions exist before one of our competitors has substituted another type of equipment, 'tis true that they can usually be remedied, but during the period of alteration time, effort, and money are spent in providing something that could have been more easily installed at the beginning without the resultant expense and inconvenience. How much better it would have been if the structure when being designed was equipped with the maximum gas piping facilities capable of meeting present day requirements.

Although the actual utilization of our superior fuel through modern gas heating, water heating, cooking, and freezing appliances is the chief concern of the millions of gas consumers, to realize these many pleasures and conveniences adequate pieces of gas piping are most essential. It therefore behooves every architect and builder to make provision for complete gas connections in all buildings—regardless of whether or not it is being constructed for a particular client or for speculative purposes. Both the home owner and the renter now demand the same conveniences and demand the same comforts.

But a portion of this responsibility rests on our shoulders. We owe it to the ultimate consumer as well as ourselves to cooperate with the architect in making possible complete gas piping in all buildings. It should be a recognized function of every gas utility to include in its daily program a way and means of contacting architects and builders; advising them of the many improvements being made constantly in gas burning appliances, and stressing and reminding them of the great importance of adequate house piping.

The architects, no doubt, like most business and professional men, find it either impossible or inconvenient to scrutinize every piece of literature received through the mails, and we have no assurance that OUR IMPORTANT GAS data will be winnowed from the chaff and thoroughly read. So it is casting no reflection on Uncle Sam's mail service that prompts me to state that a personal call is the only practical method of contact, if we hope to accomplish the desired ends.

It is not our intent, however, to convey the idea that the architect is either willing or has the time to always discuss what may appear to be trivial matters. He should not be bothered with unimportant detail, yet being generally of an artistic nature, possibly the omission of a piece or two of plain cast-iron pipe may not impress him as detracting from the completed "picture" unless the oversight is called to his attention. We can therefore do the architect a favor, as well as materially add to the future comforts of the ultimate occupant by conferring with the architect's assistants regarding specifications and occasionally calling to his attention the real importance of including in every job sufficient sizes, lengths, and connections of this undecorative, but most necessary gas piping.

And if at first the tasks of this architect contact man seem inconsequential and irrelevant, visualize if you will a wide-spread omission of these aforementioned connections and—what of the domestic load then?

Gallagher Optimistic

While conditions during the past two years have presented difficult operating and management problems to public utilities, R. W. Gallagher, president of the American Gas Association, views the outlook for the new year with optimism. "Business conditions cannot help but improve during 1932," he asserted. "There is apparent, and has been for sometime, a growing demand for necessary replacements, both of household equipment and otherwise, and this demand, together with the growing development of central househeating, air-conditioning, gas refrigeration and other distinctly modern uses for gas, is I think, slowly crystallizing into action."

Mr. Gallagher also believes there now exists a better mental feeling in the form of general acceptance of changed conditions. "These things may very well be a means of lightening considerably our present business outlook, and I believe that they will be. We certainly look forward to a good year."

Mr. Gallagher's opinion is supported by statistics of the gas business of this country for 1931. They point to a continued growth and expansion particularly in the number of domestic customers served, in the number of communities served, accompanied by the stability which has always been an outstanding characteristic of the industry. Aided by sound financing, intelligent research, modern sales methods, improved public understanding, the gas companies have enlarged and improved their service constantly. This industry is entering 1932 with a confidence based not only on a long-continued service, but also because of the quickening public appreciation of that service which has been created by scientific planning and a high degree of enterprising salesmanship.

Design of Gas-Compressor Stations

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(Continued from December issue)

THE next thing to consider is peak load, or in other words, the point of maximum horsepower. Theoretically, peak load occurs when $R = \sqrt[\frac{n-1}{n}]{\frac{n}{.2395}}$ so that for $n = 1.315$, peak load occurs when $R = \sqrt{1.315} = 3.137$, and for $n = 1.262$, peak load occurs when $R = 3.068$.

Due to the influence of clearance and other factors, the peak load always occurs at a lower compression ratio than the theoretical. For well-designed plate valve type compressors an average value is $\frac{P_2}{P_1} = 2.7 = R$, but in checking any particular case it is well to assume various values of R and plot a curve to show the exact point at which peak load occurs. It is rather important that this be done, because the compressors in a gas station are usually subject to wide variations in operating conditions, and the engineer should be sure, before giving final approval to machines to be purchased for any compressor station, that the cylinders are of proper size and design to take care of any reasonable variation in the operating conditions without overloading the engines. When operating conditions have become very definitely different from those for which the station was originally designed, it is then necessary to figure on an entirely different set of cylinders. In modern practice, this may be handled in different ways. If the cylinder castings are large enough, sometimes a mere change of liners and pistons will solve the problem.

Most manufacturers have a definite line-up of cylinder patterns which will permit a variation in the size

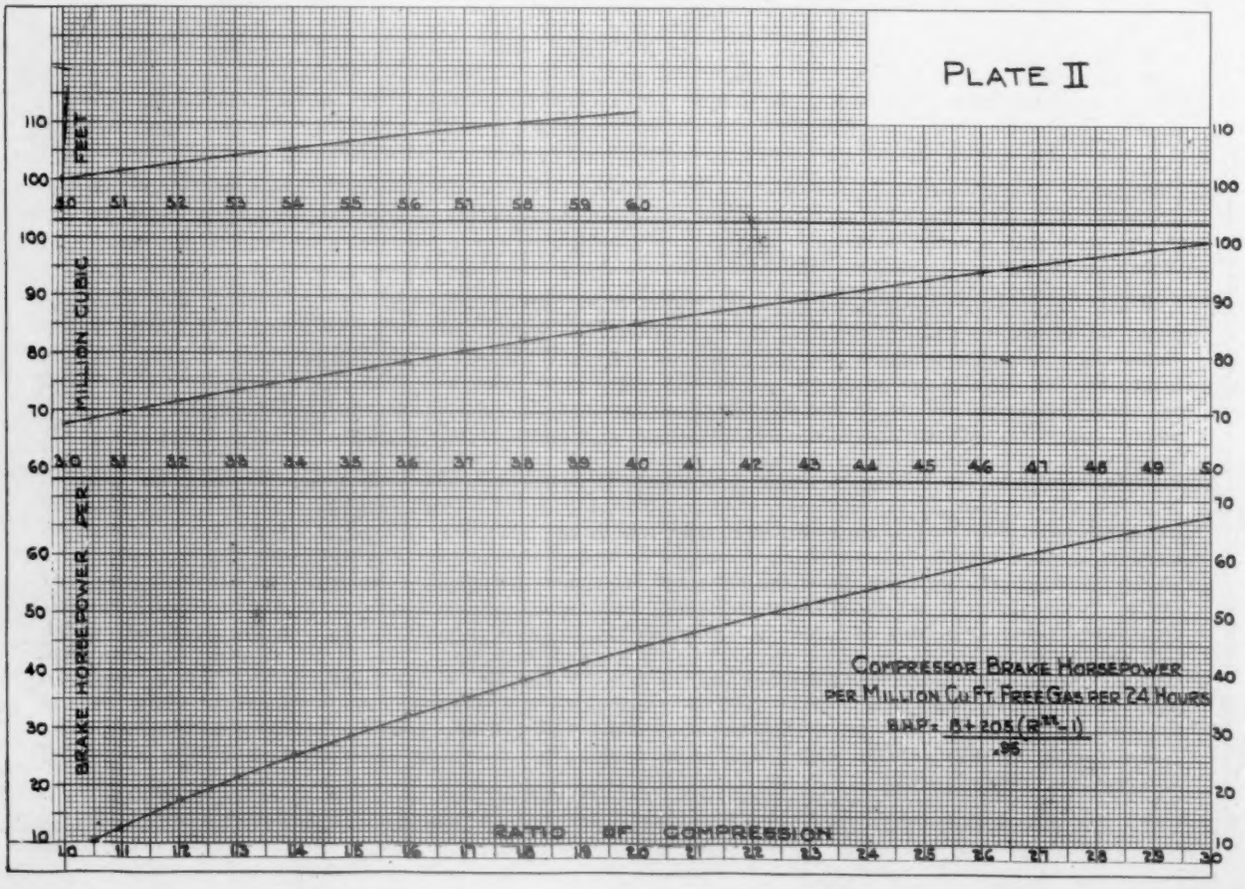


PLATE II
FEET
MILLION CUBIC
BRAKE HORSEPOWER PER
RATIO OF COMPRESSION
COMPRESSOR BRAKE HORSEPOWER
PER MILLION CU. FT. FREE GAS PER 24 HOURS
B.H.P. = 8 + 205 (R^1.315 - 1) / .95

of the liners of as much as four inches in diameter. There is a limit to the variation possible, because of the extra clearance added when changing from a large liner to a smaller one. However, some manufacturers build their cylinders without liners, and depend on changing the head-clearance to take care of a change in operating conditions. The best method, and the cheapest in the end, if variable conditions are to be encountered, is to have the cylinders designed and built with clearance pockets, which may be equipped with hand-operated or automatically-operated clearance valves to take care of overloads. Such an arrangement may obviate the necessity of ever changing cylinders or liners. As a further step in providing for overloads, the inlet valves may be equipped with valve-lifters to hold the valves off their seats. This has the effect of making the cylinder single-acting for the time being. Finally, by-passes can be provided to transfer a portion of the gas from one end of the cylinder to the other.

Standard Air-Compressor Practice

Of course, with the formulas given in the preceding paragraphs, it is a simple matter to reverse part of the operation in order to figure what size cylinder will be required to meet a given condition. The engineer, however, must be sufficiently familiar with good compressor practice so that his assumptions of volumetric efficiency, compression efficiency, mechanical efficiency and clearance will closely approximate the actual values as finally obtained from the manufacturer.

It will be noted that in the discussion just completed, the formulas are based on units of cubic feet per *minute*. This is standard air-compressor practice. However, the natural gas man thinks in units of millions of cubic feet per *day* of 24 hours, and therefore is generally interested in horsepower required to compress a given amount of gas, expressed in these units. An exact formula giving this result can of course be developed from the formulas already stated, but for quick figuring the following is sufficiently accurate:

B.H.P. per million cubic feet actual gas per 24 hours $= \frac{8 - 205\,(R^{.22} - 1)}{.95}$ in which R is the ratio of compression, as before.

It will be seen that in any formula involving horsepower, the horsepower per *unit* of measurement is the same for any compression ratio; that is, the horsepower factor is a constant. A curve giving values per million cubic feet of actual gas per 24 hours is shown on plate II.

Spare Units To Be Installed

In figuring the number of compressors required, provision should be made for spare units. The number of spares to install will depend largely on the size of the station and its importance to the system as a whole. A forced shut-down due to accident or failure of a compressor unit may seriously affect everything beyond the station, hence it is advisable to provide against such a contingency by the installation of additional units beyond those actually required to handle the normal volume of gas. This also permits the station operator to keep every unit in the plant in first class running order, and reduces loss of time from defective machinery to a minimum.

After the type, size, and number of compressor units, including spares, has been determined, consideration is given to the selection of auxiliary equipment. A typical gas engine plant would include about the following, in addition to compressors:—

Scrubbers on intake line;
Aftercoolers on discharge line (plus inter-coolers between stages if compression is accomplished in more than one stage);
Drip tank on discharge line;
Water supply system, including pumps;
Lubricating oil storage tank;
Lubricating oil cleaning apparatus;
Lubricating oil transfer pump;
Exhaust mufflers;
Starting-air tanks;
Starting-air compressors;
Overhead crane and chain-block;
Fuel gas meters and regulators;
Gauge boards and gauges;
Thermometers;
Necessary valves and fittings;
Machine tools;
Auxiliary generator unit;
Vapor-proof lights and fixtures.

The foregoing items are essentials for a gas engine-driven installation, although the machine tools and auxiliary generator-unit may sometimes be omitted in small stations, where there is an outside source of electric power and when the plant is located within reasonable distance of a town having repair-shop facilities.

For a steam plant, other equipment will be necessary. This additional equipment would include:

Boilers;
Stokers (if coal-fired);
Ash-handling equipment (if coal-fired);
Feed water heaters and boiler feed pumps;
Steam pressure regulators;
Steam condensers and circulating pumps;
Water-treating plant, (not always required).

Taking up a few of the foregoing items in detail, it may be stated as a general principle that it will pay to purchase only the best materials for a permanent plant. It is true that some stations are designed and built for a comparatively short life, say five to six years, and certain items may therefore be of a lower standard of quality than for a more permanent installation, but even so, it will be found good practice to buy materials which will stand up under the severe service imposed. It is well to remember that a few shut-downs due to failure of equipment will more than wipe out any difference in first cost between good equipment and other equipment which has cheapness for its sole recommendation.

Cooling the Gas

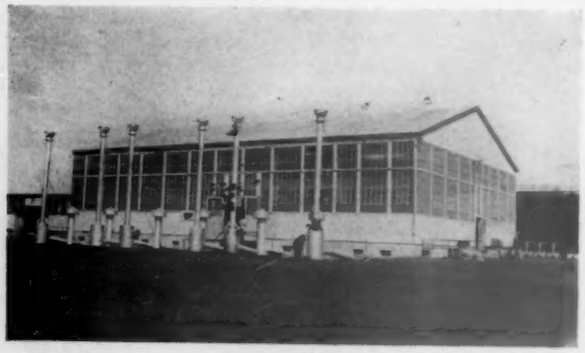
Let us look for a moment at the question of cooling the gas. The gas, as it leaves the compressors, should have a temperature somewhat less than 300° F. In well designed plants, the discharge temperature is about 240° F. and provision should always be made for cooling this outgoing gas, as nearly as possible, to intake temperature. This permits putting more actual gas into the main line, drops out entrained moisture, reduces destruction of coupling-rubbers, and permits of more accurate measurement of the gas.

Coolers in general use are of two main types, the open and the closed. Open type coolers consist of a series of pipe coils, having water constantly dripping over them, and these coils may be built up of standard pipe and fittings or may be shop-fabricated units such as are built by a number of well-known manufacturers. Their principal advantages are low water consumption and very efficient cooling, due to the atmospheric effect. The disadvantages are their bulkiness, large ground space required, and the necessity of erecting them over a concrete tank.

The closed type of cooler consists of a shell containing a nest of small tubes, usually ½" to 1" in diameter. In most of these closed coolers, the gas enters the shell and flows over the tubes, with the water passing through the tubes. They may be single-pass, or multiple-pass, but in any case, they are usually of the counter flow type with the hot gas first encountering the warmest water. A well-designed tubular cooler should give a heat-transfer rate of 20 to 30 B.t.u. per square foot of cooling surface per degree temperature difference per hour. The cold temperature difference, that is, the difference in temperature between the outgoing gas and the incoming water, should average 10°-15° F. for satisfactory operation. Water consumption is rather high, about 2.5-3 gallons of 60° inlet water per 100 cubic feet per minute of actual gas, but it is often possible to crowd such a cooler beyond its nominal capacity, and with slightly cooler inlet water, considerably less water may be used without affecting the cold temperature difference more than a few degrees.

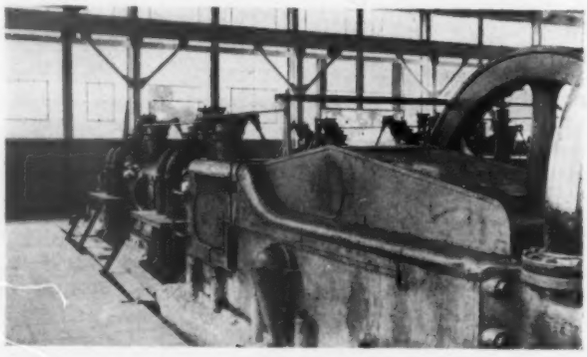
Advantages of Closed Type Cooler

The advantages of the closed type cooler are its compactness, portability, accessibility and neat appearance. If severe weather conditions are likely to be encountered, such coolers may be placed in the engine room, directly adjacent to the compressors, in any convenient location. The cost of closed type coolers averages about $2.00 to $3.00 per square foot of cooling surface, depending on the materials used, the pressure conditions, and to some extent, the manufacturer. In the writer's opinion, the closed type cooler is preferable for most installations. It is thoroughly practical to arrange the entire cooling system so that a large part, sometimes all, of the cooling water can be passed first through the coolers, then through the compressor jackets, and from there through the engine jackets. This conserves water, and at the same time permits each part of the system to operate at its maximum efficiency. Suppose the inlet water to the coolers to be 60° F. It will leave the coolers at 70°-75° F., leave the compressor jackets at 85°-90° F., and will leave the engine jackets at 120°-130°, which is proper for highest efficiency in the power end.



A large modern Compressor Station in the Monroe, La., Gas Field. Exhaust side, main building, with cooling tower and auxiliary building in background.

One of the most important features of any compressor station is the character of the pipe, valves and fittings. High pressure piping and valves should preferably be of steel, with steel fittings, and with vanstone pipe flanges. Inlet and discharge valves between the compressors and the suction and discharge headers should be of the plug-cock type wherever possible. Such valves are generally easy to open and shut quickly, and what is more important, are liable to stay tight. The ordinary double-disc or wedge type gate valve, while very largely used, is generally unsatisfactory for station service, and while the plug-cock type is not 100% perfect either, it is on the whole much more suited to the conditions encountered. Station valves have to be opened and shut frequently, and it is very hard to keep the ordinary type of gate valve from leaking under such service. Even a slight leak will in time build up considerable volume and pressure between the gate and the compressor, which very often results in the gas flowing back through the piston rod packing and into the engine room. For this reason, blow-off valves must always be placed on the intake and discharge headers. Safety valves should also be placed between the compressors and the gates, particularly on the discharge lines.



Type of 1250 direct connected gas engine driven Compressor Units used in large modern Compressor Station in Monroe, La. Gas Field—looking toward power end.

An efficient scrubber or filter should be installed on the intake header to catch any sand, scale or grit which would otherwise pass into the compressors. Such material, if permitted to go through the compressors, causes excessive wear on liners, pistons, piston rings, and valves.

A drip-tank or other device should be installed on the discharge line, beyond the coolers, to catch any oil, moisture, and dirt which is not knocked out in the coolers themselves. This is a precaution against material which would otherwise affect meters, valves, and house-service equipment.

Provision should be made for expansion on the engine exhaust lines, and on the compressor discharge lines, between the compressors and the coolers. If this is not done, the tremendous forces exerted by reason of the expansion of such pipes will cause cracked walls and floors, and may even throw the engine itself out of alignment.

Proper Lubrication Important

The question of proper lubrication is of the highest importance. If a filter system is not built into the compressing unit itself, provision should be made for continuous filtration of the crank case oil. It is sometimes advisable to install a centrifuge or separator in addition to the filter system, in order to get rid of any water which may have accumulated.

It is almost needless to say that sufficient recording instruments should be installed so that a complete graphical record of each day's operation is always available. If any unit is not performing properly, it can be quickly detected and the trouble remedied. It is practically impossible to operate a station of any size at highest efficiency without having such daily records.

Auxiliary machinery, such as pumps, air compressors, generator units, etc., should in general be of the high-speed, direct-connected type. In the case of air compressors for supplying starting-air for the main engines, it is usually good practice to have one unit motor driven and one unit gas or gasoline engine driven. In large plants, the gas engine-driven unit may be the one in general use, with the motor-driven unit as a standby. Centrifugal pumps are the most satisfactory for all-around compressor station service, as they can be arranged for practically any type of drive and any operating conditions.

Compressor and auxiliary buildings may be built of a variety of materials. The most permanent, of course, are of brick or tile walls with slate, asbestos, or sheet iron roof. Such buildings are fire-proof, require a minimum of paint, and do not require much heat in winter. The cost, however, is in many cases prohibitive. The type of building which is generally decided upon is of all steel construction, with roof and siding of corrugated asbestos, or steel sheets. Such buildings may be bought completely fabricated, and are of course easily assembled or torn down when necessary to move them to a new location. The construction is light, but strong, and is well-adapted for the installation of a traveling crane, which should always be included. A crane will more than pay for itself during the erecting period, and thereafter is always available should it become necessary to remove any part of the machinery.

Naturally such buildings are not always completely tight and weather-proof, but this is often an advantage, in that it provides for extra ventilation and tends to prevent accumulations of gas inside the building. Floors in these buildings should preferably be of tile or concrete, which should be painted with a good grade of floor paint to prevent penetration of oil and grease. It is well also to paint the engine foundations above floor level with the same type of paint. All steel work, inside and out, should be painted with several coats of aluminum paint. This adds considerable beauty to the station, in addition to being first class protection against corrosion.

Layout of Station

So far, we have given our attention mainly to the material which enters into the construction of a station. Let us now look briefly at the layout of the station itself.

The first consideration, in the selection of a station site, is adequate water supply. If possible, the station should be located on the banks of a stream near enough so that water does not have to be pumped too far, yet high enough and far enough away so that there will never be any danger of flood waters backing up into the station. The nature of the ground should be examined, to see if it is suitable for supporting the engine foundations, and proper attention should be given to drainage facilities, nearness to a source of electric power, ease of ingress and egress, and proximity to railroads and towns. It is not always possible to select an ideal site, but the best possible location under the circumstances should always be chosen. It is of course assumed that the general location with respect to the gas field or pipe line has already been determined.

After the site has been decided upon, a complete plan of the layout should be sketched out. Possibly it will be necessary to consider two or three different layouts, before one is found which will best meet the local conditions. In making the layout, every consideration should be given to future expansion, and the piping, concrete work, coolers, headers, auxiliary buildings and auxiliary equipment arranged so that additions may be made with the least possible disturbance of existing equipment, and with a minimum of expense in connecting up to it.

Since all stations, including main line stations, should be designed to allow for complete by-passing it is considered good practice to set a station at right angles to the line, rather than bring the line into the station direct. Placing the compressor plant off the line has numerous advantages. It eliminates bends in the main line; in case of trouble the plant can be completely isolated; the piping layout is greatly simplified; it allows for future expansion of the plant with the fewest possible changes; it reduces operating hazard, and because of greatly simplified construction, reduces first cost.

The cost of building a compressor plant is influenced largely by location, size of plant and other variables. In general, it may be estimated at somewhere between $150.00 and $175.00 per installed H. P. for small stations and between $125.00 and $150.000 per H.P. for large stations. P. M. Biddison, in a paper presented at Memphis, Tenn., in May 1931, estimates the cost at $40,000 plus $115.00 per installed H.P. This cost includes real estate, employees' residences, fencing roadways, sidewalks, railway siding, water supply, etc., with a reasonable allowance for engineering and overhead during construction but not including interest during construction nor costs of financing. In the writer's experience, the figure given by Biddison is very close to the actual cost of a well-constructed station in a favorable locality. Many stations have been built for less money; some have cost more; but his figure is fairly representative.

The writer has attempted in this article to give an outline of what constitutes modern practice in designing a compressor station. Naturally each case is a problem in itself and the principles enunciated here will be subject to modification according to local conditions encountered, which, after all, is the essence of true engineering.

Employee Considerations

In conclusion, it should be pointed out all the care taken in selecting good machinery and in designing a plant to operate at high efficiency and low operating cost will be entirely wasted, unless first-class men are chosen to operate it. Many compressor plants are located in more or less isolated spots, and the men who operate such plants, therefore, should have every facility provided for their contentment and that of their families. It will be found good investment to build comfortable cottages, and to spend considerable money on landscape work around the entire station site, with plenty of flower beds and shrubbery and perhaps a small fountain and fish-pond. Good operators take a lot of pride in the appearance of their stations, outside as well as inside, and it is safe to say that a slovenly appearing plant is a fair indication that the machinery will be operated in like manner. It costs money, lots of it, to build a modern compressor plant, and consequently every effort should be made to secure the maximum efficiency possible.

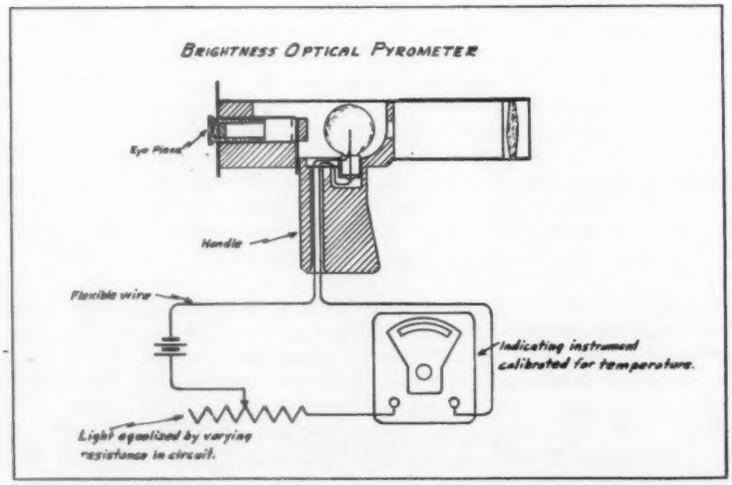
Industrial Furnaces For Gas

XII-Accessory Equipment

(*Continued from Dec. issue*)

L. E. BIEMILLER

Supervisor, Fuel Sales, Consolidated Gas Electric Light and Power Company.



TEMPERATURE measurement and thermostatic control are closely related. Sometimes both of these are combined in one set of equipment, and in other cases the temperature measurement is distinct from temperature control.

The most familiar instrument for temperature measurement is the glass thermometer, usually filled with mercury. It is obtainable in special sizes and shapes for industrial use, with bulb and stem well protected, so as to result in a satisfactory life under conditions of factory usage. Such thermometers can be used up to 1025° F., but for temperatures above 500°, nitrogen is used on top of the mercury to prevent evaporation, and to keep the column from breaking. They are indicating only.

There is a class of thermometer which may be considered as a pressure thermometer. It consists of a bulb filled with either a gas or a liquid, to which is attached a long capillary tube, the other end of which connects to a pressure gauge calibrated for temperature. The pressure gauge measures the pressure developed, as a result of the temperature of the medium surrounding the bulb.

The pressure gauge, calibrated in units of the temperature scale may be indicating, or may be caused to record on a chart, the movement of which is controlled by a clock mechanism. This pressure controlled needle or hand, can be caused to make electrical contacts so as to actuate a motor valve in a gas or air line, or may control the application of a fluid under pressure which actuates a diaphragm valve in the gas or air line. By such means an accurate automatic control of temperature can be secured. Such equipment is used mostly for temperatures under 1000° F; with valves of different sizes, and against widely varying pressures dependant upon the type of valve.

Thermostats Employ Same Principles

The same principles of design are used in thermostats which function entirely independent of temperature measurement. One extensively used thermostat consists of a mercury filled bulb and capillary tube which actuate a valve through direct expansion of the mercury. An adjustable dial located next to the valve permits the ready adjustment of the temperature at which the valve is to open.

Another type of thermostat consists of a valve actuated by an element composed of a carbon rod in a metal tube. The difference of the coefficient of expansion of the carbon and the metal results in a force which actuates the valve. The valves, in the case of both of these thermostats, may control the full flow of the gas or air to the appliance, or may merely control a small amount thereof which serves to open and close a large diaphragm valve through which the main supply passes. The diaphragm valve may be "duplex," that is, a double valve which controls both air and gas to a nozzle mixing burner. The carbon-metal thermostats are used for temperatures from 100 to 2000° F., against gas pressures up to 12 pounds, and are made as standard equipment in valve sizes up to 2½ inches. The mercury actuated thermostat used for temperatures up to 900° F., is made with approximately the same size valves, and operates against pressures up to 20 pounds.

Bi-Metal Thermostat

A type of thermostat used in a limited field, is the bi-metal electric thermostat. It usually consists of a bi-metal element, in the form of a coil or spiral. Upon change in temperature this expands or contracts, so as to result in a movement at the end of the bi-metal which completes an electric circuit and actuates an electric valve. This type of thermostat is used almost entirely for temperatures under 250° F.

Very accurate temperature measurement and control can be obtained within a range from −300° to +1000° F., by means of a resistance thermometer. This consists of the element, which comprises one section of a Wheatstone bridge, and an indicating or recording instrument consisting of the rest of the Wheatstone bridge and galvanometer. By the use of electric valves, this equipment can also be used for temperature control.

The most frequently encountered pyrometer for temperatures from 1000 to 3000° F., is the electric thermocouple with millivoltmeter or potentiometer. A thermocouple consists of two wires of dissimilar metals joined at one end. The temperature to which this end is exposed set up an E.M.F. at the other end, which is a measure of the temperature. This E.M.F. is measured by a millivoltmeter or potentiometer, which is calibrated for temperature. This is readily recorded, if desired.

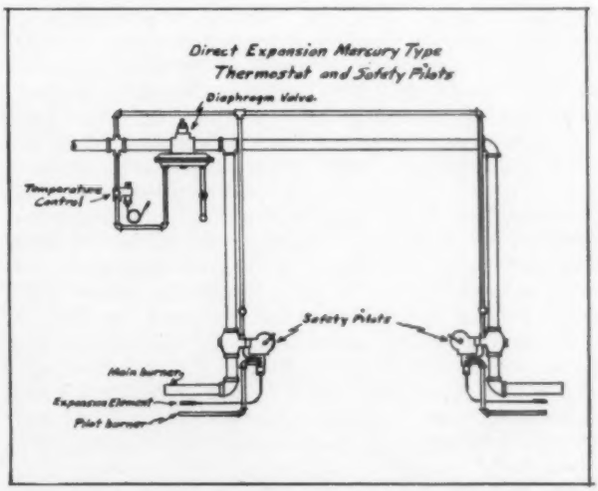
By closing jaws upon the needle of the indicator, an electric circuit can be completed which can be used to actuate motor valves of any desired sizes. The thermocouples are made of different materials depending upon the temperature range for which they are to be used, as follows:

Iron, Constantan —up to 1400° F
Nickel Chromium, Nickel Aluminum—1600 to 1800° F
Nickel Chromium, Nickel Aluminum—1600 to 1800° F
Platinum, Platinum Rhodium —1800 to 3000° F

The couples are covered by protection tubes, the material of which varies largely with temperature, and furnace atmosphere. Materials frequently used are cast iron, wrought iron, porcelain, silica block, nichrome, steel, fused quartz, nickel, and aluminum. These tubes must be protected from both mechanical and thermal shock. Silica tubes, for example, should not be inserted into, or withdrawn from, hot furnaces rapidly, or they will deteriorate quickly due to sudden expansion and contraction.

High Temperature Pyrometers

For very high temperatures, optical and radiation pyrometers are used. The radiation pyrometer measures the total radiation from a source, which is focused on the hot junction of a delicate thermocouple. The brightness optical pyrometer compares the brightness of a narrow range of wave lengths from the hot body with that of a comparison source. The color pyrometer compares the color of the entire visible radiation from the hot body with that from a comparison source. All these instruments can be used for indicating, recording, or controlling. They require more careful maintenance than most other types of temperature instruments.

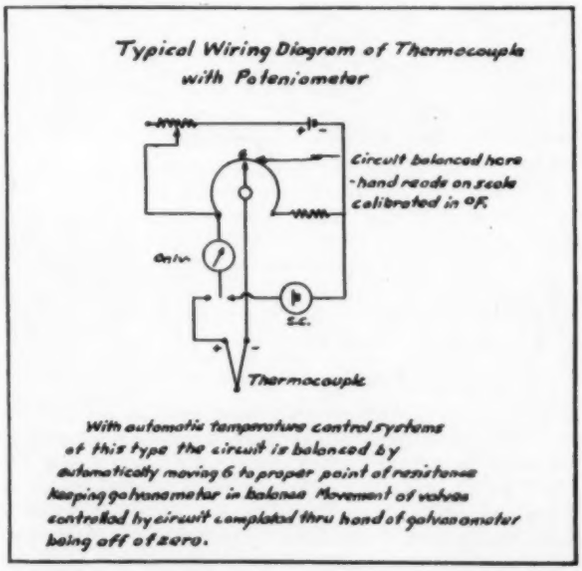


With the electric instruments here discussed, it is possible to control a desired time-temperature cycle of a heating operation; for instance, by the use of a cam to move a control table with which the pointer makes contact, across the temperature scale of the instrument at the desired rate.

It is extremely important that the proper burners be used on a furnace to be thermostatically controlled. Because given burners function satisfactorily on a manually controlled furnace, does not mean that they will function with equal satisfaction when automatic control is adapted to the furnace. If the main burners are caused by the thermostat to shut off completely, they must relight from a pilot. Many burners which light without any trouble when turned on manually, will backfire when turned on by a thermostat. If the thermostat does not cut off the burners completely, but merely throttles them, it is important that they can be throttled sufficiently low, without backfiring, to prevent the temperature of the furnace creeping above the desired minimum thermostat setting.

Thermostatic Pilots

Ever since gas was discovered and used as a fuel there has been the perplexing problem of eliminating the effects of human carelessness, or suddenly developed bad furnace conditions. Within the last few years much progress has been made in the elimination of certain types of these problems, by the development of thermostatic pilots. They serve to shut off the main gas burners if for any reason the pilots which are used to light them go out.


Typical Wiring Diagram of Thermocouple with Poleniometer
Circuit balanced here - hand reads on scale calibrated in °F.
Galv.
S.C.
Thermocouple
With automatic temperature control systems of this type the circuit is balanced by automatically moving 6 to proper point of resistance keeping galvanometer in balance. Movement of valves controlled by circuit completed thru hand of galvanometer being off of zero.

Many thermostatic pilots work on the same principle as the expansion type thermostat. The pilot flame is caused to impinge on a solid, or on a bulb containing a gas or liquid, so that the resulting expansion holds a valve in the main gas line open. When for any reason the pilot goes out, the expanding element contracts, and the valve in the main gas line closes. These thermostatic pilots can be obtained so that they not only shut off the main gas supply, but also the small amount of gas to the pilot light. With thermostatic pilots, it is usually the case that the main burners cannot be lit, until the thermostatic pilot flame has been lit long enough to cause expansion of the thermostatic pilot element.

Another type of thermostatic pilot is dependent upon the electrical conductivity of the pilot flame. If the pilot flame goes out, the electrical circuit is broken and an electrical valve in the main gas line closes, cutting off the gas to the burners. This has the advantage of very rapid action, with ease of adaption to difficultly located pilots, and flexibility of use in systems of complicated electric controls.

It is very important that thermostatic pilots be carefully installed. In cases where there are a number of burners and the piping is complicated, it sometimes happens that the thermostatic pilot is installed so as not to cut off the gas to all the burners. The pilot flame of the thermostatic pilot must be located so that it is not subject to excess draft, which will pull the flame off the burner, or cool the thermostatic element. At the same time the element of an expansion type thermostatic pilot

must be located so that it can cool off quickly, and not hold its temperature due to heat radiated back from hot combustion chamber walls.

For some operations it is essential that the gas pressure at the appliance be held very constant, that is, within a variation of less than 5 per cent. This is less than the variation which occurs in the pressure of gas as distributed by the average gas company. It is also less than the variation which will result due to change in load on a long house line supplying a number of appliances. Governors can be used to give the desired constant pressure. In the first case a governor would be located at the meter and in the second case at the individual appliance. Governors are particularly justified in the following cases:

1. Where the gas is used in two pipe burners without any zero governors or other arrangements for proportional mixing.
2. Where gas is used on appliances which need a certain maximum amount of gas to function satisfactorily, but which burn with incomplete combustion when any additional gas is passed.

A recently developed type of furnace control is that used to automatically maintain a constant pressure in the furnace. If the furnace pressure varies, the furnace atmosphere will vary, when it is equipped with burners injecting air, or when there is any great amount of air leakage into the furnace. Recently developed equipment controls this atmosphere by dampers which are automatically actuated in conjunction with thermostatically controlled fuel valves.

Venting Furnaces

Gas furnaces cannot be vented to natural draft chimneys, if the room in which they are located is subject to a vacuum from ventilating fans. In such cases the furnace must be vented into the ventilation system, or the furnace must be enclosed and the resulting space directly connected to the outside and made independent of the ventilating system. Vents should be made to brick stacks or inside metal stacks, and there should be a minimum of horizontal run. The vertical stack should be higher than the highest point of the original, or adjacent surrounding buildings. Excess draft should be protected against by the installation of a locked damper in the vent, and the use of some counterweighted flap opening in the vent pipe between this damper and the furnace.

When oxygen is mixed with gas, even with nozzle mixing burners, it is important that an effective protection device be installed to prevent the possibility of oxygen getting back into the gas line. A much used type of such protective device consists of a water seal which is readily blown by any oxygen which backs up.

In some cases where air and gas are mixed, a device should be used to prevent the possibility of air getting back into the gas distribution system. When nozzle mixing burners or proportional mixing devices with zero governors are used such devices are not necessary. But where air and gas are mixed in mixer tees ahead of the furnace manifold, particularly when the air is available in large quantity and at high pressure, protective devices are advisable. If the gas is under sufficient pressure, the usual type of check valve could be used in the gas line. But with gas at low pressure, a check valve must have a very light swinging part, or diaphragm controlled valves should be used.

It is by the selection and correct installation of the proper accessory equipment on industrial gas furnaces that the full advantages of gas fuel can be obtained. Then the desired furnace temperature and atmosphere can be obtained and maintained automatically, which results in the maximum output of highest quality of the furnace product.

Production of Natural Gasoline Records First Annual Decline in 1930

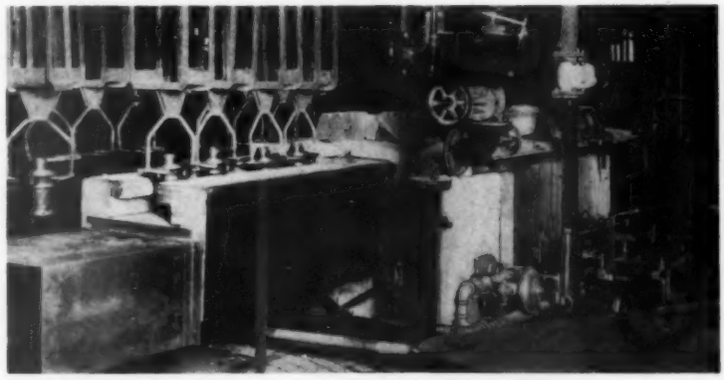
THE trend of natural gasoline production, consistently upward since its beginning, showed a marked reversal in 1930, when the output failed to surpass the 1929 total. The production in 1930 amounted to 2,210,494,000 gallons as compared with 2,233,688,000 gallons in 1929, a decrease of 1.0 per cent, according to the United States Bureau of Mines, Department of Commerce. In spite of this decline, the United States still ranks far ahead of the other nations in natural gasoline production. In 1929, the latest year for which complete world figures now are available, the United States produced 91 per cent of the world total.

Natural gasoline is unique in that its production is influenced chiefly by the output of crude oil, says G. R. Hopkins, in a statement just made public by the Bureau of Mines. This is because the supply of natural gas, the raw material, fluctuates with the activity in the crude oil fields. In 1930 the output of crude was considerably below the record total of 1929, hence the production of natural gasoline at the majority of those plants which operate on "wet" or casinghead gas was reduced. On the other hand, the demand for natural gas to supply the large pipe-line systems increased in 1930, and since this gas is usually treated before it is turned into the pipe lines, the output of natural gasoline rose accordingly. Thus the increase in production of natural gasoline in the Texas Panhandle area, the point of origin for a number of large pipe lines, largely compensated for the decline in output at Seminole, the largest producing district, and a "wet" gas area. The trend of natural gasoline prices, which ordinarily does not exert much influence on production, had a tendency to materially restrict the output of natural gasoline in 1930. This was because the price fell to such low levels that many of the small manufacturers were forced to cancel their gas contracts and most of the large companies curtailed the construction of new plants. Another factor in the decline in production in 1930 was the drop in yield due to a growth in stabilization. To meet the new specifications for natural gasoline, the manufacturers have found it necessary to do more stabilizing, which means that what formerly comprised the lightest ends of their product must now be utilized in some other way.

The average yield of natural gasoline per thousand cubic feet of gas treated fell from 1.14 gallons in 1929 to 1.06 gallons in 1930. This marks the second successive year in which the yield of natural gasoline has declined, which follows a long period of increasing recovery. Practically all of the States showed a lower yield in 1930; the most notable exception was Wyoming, where the yield rose from 1.34 in 1929 to 1.73 in 1930. Arkansas continued to report the highest natural gasoline yield of any State, although its yield dropped from 2.87 in 1929 to 2.64 in 1930. The principal cause of the widespread decline in yields in 1930 was the growth of stabilization, which cut down the volume produced through the elimination of the lighter ends. A minor cause was the growth in relative importance of the Texas Panhandle, a "dry" gas district with a comparatively low yield.

Continuous Liquid Heating Solves Heat Treat Production Problem for Large Automobile Wheel Manufacturer

W. GORDON PARK
Works Manager,
The Kelsey-Hayes Wheel Co.

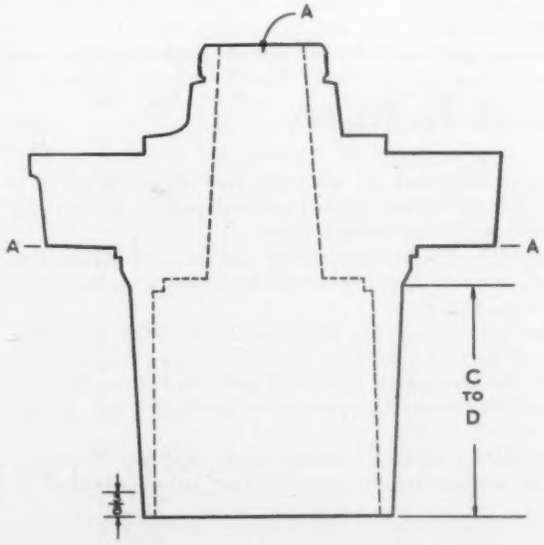


Hubs going through Pre-Heater prior to immersion in Lead Bath

THE installation of Continuous Liquid Heating, a new development, in the Kelsey-Hayes plant exemplifies to what lengths this company is modernizing. The new Continuous Liquid Heating equipment is used in the hardening of rear wheel truck hubs in the Military Avenue plant at Detroit.

Under former conventional methods the wheel hubs were lead hardened by the batch method, utilizing manual labor. This method was slow, cumbersome and unreliable. It was a real restriction to the volume production necessary. Obviously the method of heat treating was behind the high state of efficiency that had been developed throughout the plant.

Production officials of Kelsey-Hayes realized that in these hand methods of hardening lay the real deficiency. In cooperation with Surface Combustion Corporation engineers a careful analysis was made. It was found that the difficulties of hand operation could not only be eliminated, but that it would be possible to utilize the conveying system of the plant, providing an uninterruped flow of operations through the heat treating department down to the finish grind. It was also demonstrated that by a more accurate control of hardening it would be feasible to utilize the forging itself as the outer race for the wheel bearing.



Sketch of Auto Truck Hub

Study of Conveying Mechanism

After the possibilities and advantages of Continuous Liquid Heating were clearly outlined, Mechanical Handling Systems, Inc., Detroit, conveyor mechanisms experts, were secured to cooperate with Surface Combustion Corporation engineers in the synchronization of the continuous furnace unit with the conveying mechanism of this department.

A special gas-fired furnace, with quenching units and conveyor mechanism, was designed to coordinate perfectly with production flow, without alteration of the regular production operations.

Previous to the heat treat the hubs are put through the following operations:

1. Forging rough bored and tapered at A. This operation is carried on in large automatic boring machines.
2. Finish taper bore and cut from C to D.
3. Flange is cut and trimmed. Forging threaded.
4. Oil holes drilled. The operator who drills the oil holes also replaces the hubs on the conveying mechanism which carries them on through the hardening unit.

The length and spacing of the various units in the heat treating operation were determined by rate of production, properly synchronized with the requirements of the hardening.

The Surface Combustion furnace was designed for a capacity of 90 hubs per hour at a bath temperature of 1600° F. to 1670° F., while the combustion chamber temperature below the pot is approximately 1950° F.

The lead pot used for hardening is 21" wide, 15" deep and 7'6" long, supported on cast iron top plates by means of flanges cast integral with the alloy pot.

The furnace is fired with Surface Combustion diffu-

sion and tunnel type burners, adapted to a supply of 530 B.T.U. gas.

The material handling mechanism is designed to coordinate with a production of 90 hubs per hour. Hubs are placed in a specially designed carrier which is removably suspended from the furnace conveyor. The conveyor takes the hubs through a preheater. They are then lifted automatically over the lead pot and immersed to line "A-A." The hub remains in the furnace 197 seconds.

Spraying with Caustic Soda

The hub is then lifted out of the furnace and placed on a stationary support which suspends the hub 3/8" on the lower end in the oil bath. The oil bath cycle is adjustable—from 1 to 5½ seconds. At the end of the predetermined time the hub and carrier is removed from the oil bath station and transferred to a caustic soda spray head. As the hub is set down on the spray head a valve is automatically opened and the inside of the hub is sprayed. At the end of 29 seconds the hub is removed from the spray head and the flow of the liquid automatically cut off.

The carrier and the hub are replaced on the conveyor in a water bath, having been lifted over the side of the tank by means of a transfer mechanism. Here the hub is completely immersed. After remaining in the bath approximately five minutes the carrier and hub are removed from the conveyor, lifted over the end of the tank and replaced on the conveyor. The hub is then removed from the carrier for inspection of hardness and the final grind. The carrier continues on the conveyor for another cycle.

The transfer mechanism consists of 5 pair of rotating arms, so designed that they will pick up the hub carrier, lift it up and advance it about 36 inches, replacing it on the conveyor or on stationary supports. The operation of the arms is intermittent, rotating 720 degrees in 12 seconds on a time cycle of 40 seconds. The starting and stopping of the arms is accomplished by means of limit switches operated by the conveyor.

The results of this development in Continuous Liquid Heating were even more outstanding than anticipated by the designing engineers.

The labor of six men, under the old batch method, was reduced to one man who merely checks temperatures, timing, and the functioning of the conveyor system. By concentrating the equipment a great deal of floor space is saved. The inaccuracies of the personal element in the heat treating under batch methods have been entirely eliminated. Rejects are negligible, approximately 1 in 300 hubs. The entire unit is portable to facilitate changes in plant layout, expansion, etc. Under the old method it was impossible to hold the uniformity of heat treat accurately enough from a production standpoint to utilize the forging as the other race of a roller bearing, where tolerances cannot exceed ±.003. This was effectively accomplished with this new equipment. Lead carry-off was also reduced with the continuous method.

This furnace is operating 23 hours per day, the only time lost being a half hour at midnight and noon. The installation has been so successful that a duplicate extra unit is being constructed to take care of increased production requirements.

Continuous Liquid Heating, a new development, presents a large field for economy in many industries. Its possibilities are practically unlimited in the replacement of batch methods of pot hardening.

Consumption of Natural Gas at Refineries

ALTHOUGH the consumption of natural gas as refinery fuel has declined for the ltst few years, it still ranks as a very important source of heat at many refineries and as the only source at some plants. The total consumption in 1930 amounted to 98,842,000,000 cubic feet, a decline from the previous year of 4,887,000,000 cubic feet or 5 per cent. Practically every district used less natural gas as refinery fuel in 1930, the most notable exception being California where the completion of pipe lines to the San Francisco area resulted in a material increase in its use at the expense of fuel oil. The percentage decline in consumption of natural gas as refinery fuel was less than that of crude throughput, which might indicate that natural gas was holding its own as a refinery fuel. However, from the standpoint of heat units, the situation is quite different, for the percentage of the total that was supplied by natural gas declined from 17.3 per cent in 1929 to 16.7 per cent in 1930.

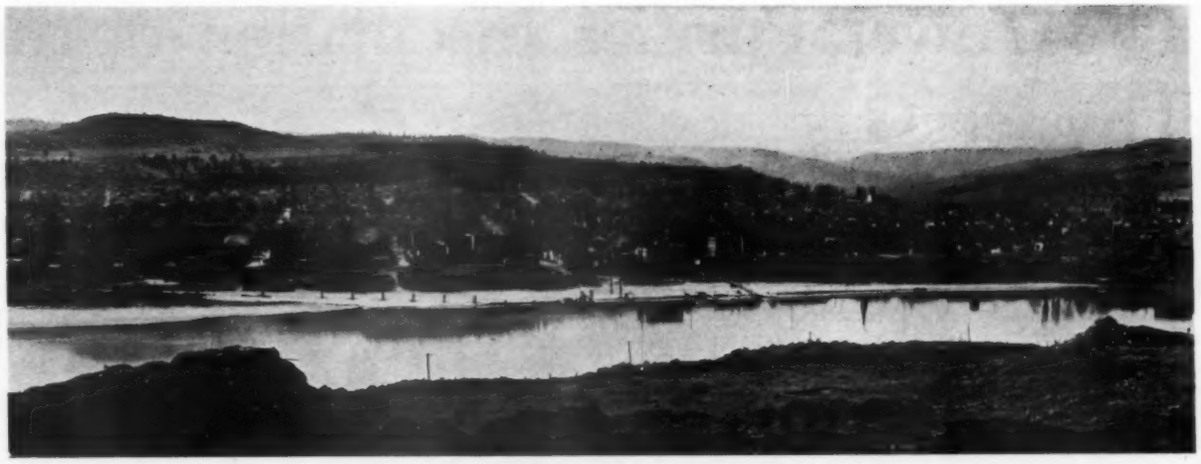
Stability of the Gas Industry

Progress of the gas industry, which has again demonstrated its stability and essentiality in a difficult year, has depended upon its organized programs of research and salesmanship, according to Alexander Forward, managing director of the American Gas Association.

The newer uses for gas, house heating, refrigeration, house cooling, and air conditioning, the result of careful and resolute research and application, and developed by aggressive sales policies of the companies, have maintained the industry's position.

Before the Soviets conceived a five-year plan, the American Gas Association in 1926 adopted a five year program of Association activities, prepared by a committee of executives headed by George B. Cortelyou, president of the Consolidated Gas Company of New York, and has adhered consistently to this program, and the Association has just entered upon a revised plan of activities for the second five-year period.

More than $300,000,000 has been invested during 1931 in the construction of long distance natural gas pipe lines, added Mr. Forward, and this expenditure, largely for pipe, averted a much greater loss in the iron and steel industries.



Panoramic View of The Dalles and Vicinity

Oregon Community Gets Air-Butane Plant

THE Dalles, Oregon, is the most recent community to be selected by Natural Gas Corporation of Oregon for the construction of a new air-butane gas plant. Work was started there on November 12th, and it is anticipated the plant will be ready for service sometime during January, 1932.

This construction work came immediately preceding the completion of the new plant at El Centro, by Natural Gas Corporation of California, and is the twenty-second plant of this type to be built on the Pacific Coast in the past eight months by Natural Gas Corporation of Oregon, Natural Gas Corporation of Washington and Natural Gas Corporation of California.

It is of the same general design and operation as these former plants, and construction is being done under the direction of Standard Management and Operating Corporation with J. H. Lane in charge as resident engineer.

It is estimated by company officials that at least 200 consumers will be on the lines within the first month after the plant is completed, with a total of approximately 500 consumers by the end of the second year. This should put the operation of this plant upon a profitable basis at an early date and make it a valuable addition to the properties of Natural Gas Corporation of Oregon, according to A. E. Strong, General Manager.

Although the general typography of The Dalles is hilly, very little difficulty has been encountered in the construction of the distribution system, and it has been possible to use the ditching machine for practically the entire job, although short rocky stretches have been dug by hand.

All of the pipe used is wrapped steel, laid with a minimum covering of at least 18", while a total of approximately 45,000 feet of high pressure distribution system will be necessary to take care of the immediate demand for gas service. The plant will have a capacity of 7200 c.f. per hour, with storage holders consisting of one liquid tank of 15,000 gallon capacity and two finished gas holders of 12,500 c.f. each.

The building will be of sheet metal construction, rather than tile as has been previously used, and will be 30 feet long in place of 25, making room for a second compressor. It will be divided into two rooms, one for the calorimeter control apparatus and the second for the vaporization and carburetion equipment, which will all be similar to that already in use in plants of the company located at Klamath Falls, Bend, Coquille, Cottage Grove and La Grande.

As is done in these plants, the necessary heat input for vaporization will be controlled by pressure conditions in the liquid storage tanks. A portion of the heat of vaporization will be supplied by a heat exchanger underneath the tank, through which the hot compressed gas passes on its way to the storage holder. Where this is not sufficient, an electric heater is operated entirely by pressure within the storage tank, while auxiliary equipment is also being installed, known as the "bubbling system." This consists of the passage of the finished gas through the liquid in the storage tank, which by means of agitation promotes vaporization. With these three means of vaporization, a constant supply of vapor is assured at all times and ample provision is made for the wide temperature range found in this locality.

The Dalles has a population of about 5800 and is located some 15 miles west of Salem. It is the county seat of Polk County and primarily a transportation terminal town for both the railroads and bus lines, with a good outlying agricultural district and several large lumber mills. Business conditions have remained very good in this community, in comparison to others throughout this territory, and the building of the gas plant and distribution system at this time has helped to make them even better. Every effort is being made to use local labor wherever possible and to make local purchases of supplies.

An active sales organization is already at work under the direction of P. C. Rollins and they expect to have a great deal of equipment on the lines the day of the changeover. To help increase interest in the new gas fuel, a special word guessing contest was conducted by the local newspaper previous to the official ground breaking ceremony, with three gas ranges given away as major prizes.

The Tower Purifier Installation* of the Thyssen Gas and Water Works Co., Ltd., at Hamborn and Alsdorf

FRANZ LENZE, Dr. Engineer
General Superintendent, D-Hamborn
and
ANDREAS BORCHARDT
Superintendent of Works, D-Hamborn

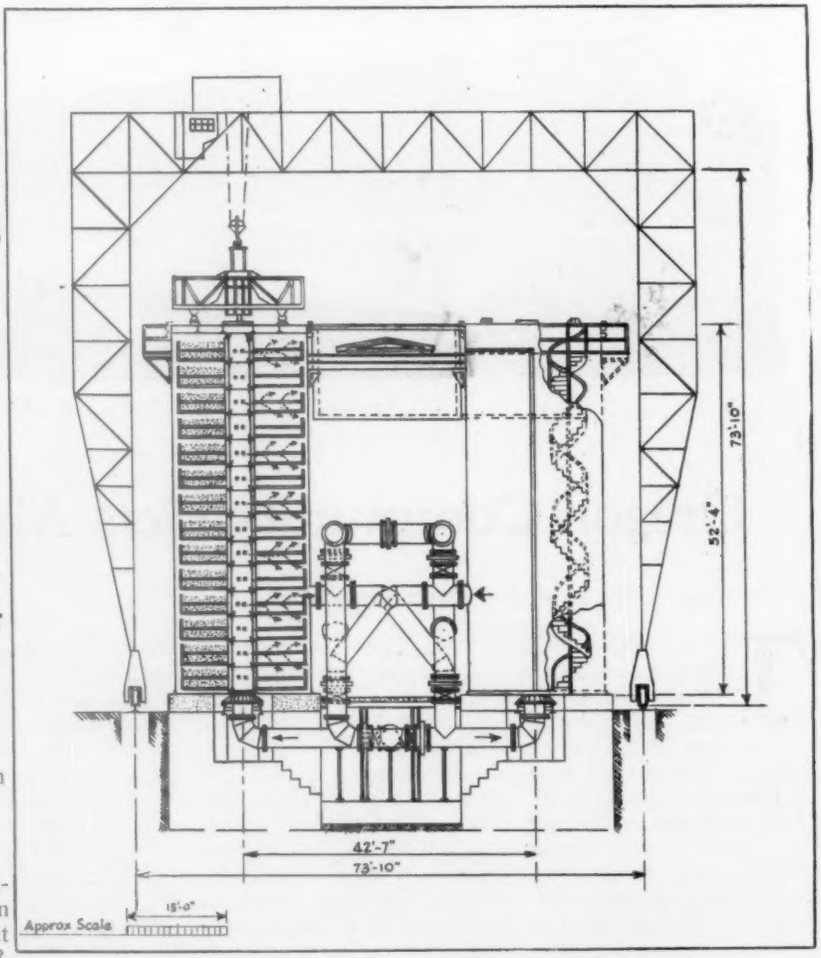


Fig. 1. Cross Section of the Alsdorf Plant

THE extension of the gas manufacturing plant of the Thyssen Gas and Water Works Co. at Hamborn at the end of 1928, resulted in a satisfactory extension of an existing installation of purifiers for the removal of hydrogen sulphide at the gas works at Hamborn. It became necessary to promptly erect a modern plant of 21,200 M. cu. ft. daily capacity adjacent to an existing installation of 10,600 M. cu. ft. This new plant is now being enlarged by an additional 21,200 M. cu. ft. and will, in a short space of time, be increased by another 21,200 M. cu. ft. daily capacity, so that the total daily capacity of the new installation will be 63,600 M. cu. ft.

In drawing up the plans, it was soon found that, on account of the limited space and the condition of the site, the construction of the usual flat or box purifiers would entail enormous installation charges. It was also evident that the usual methods for placing the fresh and removing the fouled purifying material were no longer satisfactory. Since these operations should be completed in the shortest possible time it is necessary to have a considerable labor force available for which it is difficult to find sufficient work in the intervals between the purifier changes. For this reason it was promptly decided that the preparation of the new material should, in so far as possible, be carried out mechanically. Based on these principles a new type of construction was developed and the first installation completed in the summer of 1930.

Exacting Demands

The demands which were made upon the new type of construction were as follows:

1. Ground space required must be reduced to a minimum.
2. Installation must be readily made under bad soil conditions.
3. Installation should be easy to supervise.
4. Purifiers should be changed with the smallest possible labor force in one shift.
5. The purifying material must be fouled in one operation.
6. Installation costs should be low despite the use of extensive mechanical equipment.
7. Maintenance and labor charges must be low with uniform distribution of labor over the entire year for purifier changes.

In order to satisfactorily meet these demands, the usual method of construction was abandoned and tower purifiers were installed. Figure 1 shows such a tower in elevation. The shell is built in the shape of a round tower, which results in great strength. The gas inlet is

*German State Patent

Translated from the original in Das Gas-Und Wasserfach, 16th vol. May, 1931, issue No. 20, pp. 445-49 incl. by John H. Wolfe, Superintendent, Consolidated Gas Electric Light and Power Company of Baltimore.

placed at the bottom and the gas outlet on the side of the tower shell. The purifier is covered at the top by a lid of the usual construction.

Three vertical guide channels and a ladder are placed on the inner wall of the shell. Baskets, each of which contain two layers of purifying material, are set in these towers so that there is no contact between the purifying material and the tower shell. These baskets (Figure 2) are constructed so that plate and tray supports radiate from a central pipe. These carry the weight of the

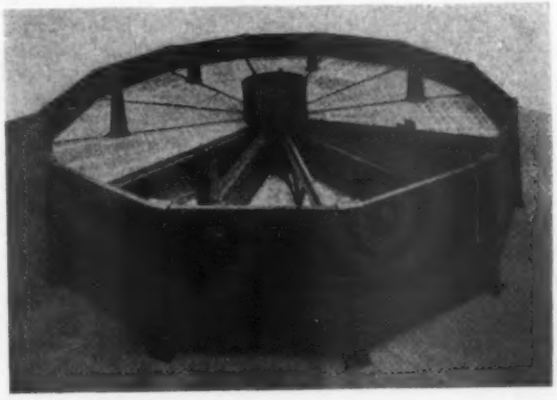


Fig. 2 Purifier Basket

purifying material and the basket wall. The outer wall of each basket is composed of a metal casing on which feet are fastened which project on the bottom beyond the periphery of the casing. In order to facilitate the removal and replacement of the basket a hanger is installed on each radial support. The central pipe is slotted so that the gas may enter the basket between the two layers of material. By superimposing the baskets in the purifier tower, a central inlet pipe is formed (Figure 1), from which the gas is distributed through the aforementioned slots. The gas enters the baskets in parallel flow and travels through the layers of purifying material in a vertical direction. It passes through the upper layer in each basket from the bottom up, and through the lower layer from the top down, issuing from the basket through the openings which are formed between the projecting feet on the metal casing. The gas leaving the baskets is collected in the annular space which is formed between the basket casings and the shell, and leaves the tower through the gas outlet connection on the side of the shell. The sealing of the individual pipe sections on the baskets is brought about by a flexible packing which is inserted in a channel in the upper flange of each central pipe. The seal is established by superimposing the next basket which transmits its weight through the lower flange of the centrally located pipe onto the flexible packing mentioned above. The pipe is closed on the top basket by means of a cover. The upper and inner side of the pipe on each and every basket contains a number of iron guides and it is through these, together with the guide channels on the outer shell, that an exact superposition is assured. By placing a number of such baskets in one shell a purifier of large cross-sectional area is obtained with a small ground area.

Fig. 3 Tower Foundation

Fig. 4 Valve and Control Platform of the Hamilton Plant

The foundation for the tower (Figure 3) is so constructed that the base of the tower is connected to a reinforced concrete ring 23.6 inches thick, which lies free on the foundation pedestal. Because of this construction it is possible to remove a considerable inclination of the tower, which might result from ground subsidence, by lifting the reinforced concrete ring by means of screw jacks which are placed in niches formed in the pedestal. This is readily accomplished, since the tower is comparatively light after the baskets have been removed. The resulting crack, between the reinforced concrete ring and the pedestal, is grouted up after applying an insulating material so as to prevent the adhesion of the ring to the pedestal. The connection between the gas inlet pipe and the bottom of the tower is placed in a convenient and accessible opening in the foundation.

Figure 4 shows the first third (21,200 M cu. ft. daily capacity) of the total purifier installation to be completed as viewed from the valve and control platform.

On each side of this platform four towers, 52.4 ft. high and 19.3 ft. inside diameter, are set up and connected in one row, each series of four being capable of purifying a daily aggregate production of 10,600 M cu.

Fig. 5 Front View of the Hamborn Plant. Daily capacity 21,200 M cu. ft. of Coke Oven Gas

ft. The pipe lines are arranged so that each individual tower in a series may be connected ahead or back, also provision is made for reversing the flow. Double gate valves are utilized for valving off, which are made absolutely tight during the changing of the purifier by sealing the upper side of the gates with water. In order to minimize the danger of warping the valve bodies, a corrugated expansion joint was installed alongside each valve. The operating platform is completely enclosed, on the sides by the towers themselves and the sheet asbestos-cement walls which fill the spaces between the towers and on the ends by means of masonry structural steel walls which are tied into the two end towers (Figure 5). The building is roofed over by an upper operating platform, from which walkways extend on both sides. In order to secure light and ventilation, windows are installed in the end walls and in the upper operating platform, being movable in the latter case. A pipe tunnel, or basement, is located under the valve and control platform. Here lie the inlet pipes to the towers, the drain system for removing the condensation, and the heating plant, which takes the form of up ended pipe radiators which are fastened onto the walls of the tower foundations. The sides of this basement are composed of the individual tower foundations, while the end walls are of heavy masonry which carry the upper masonry and structural steel end walls.

A traveling bridge crane, 73.8 ft. span and 30 tons capacity, is installed to serve and traverse the entire plant. This is seen in Figure 5, which also shows the side views of the completed portion of the plant.

Saving in Ground Space

The ground space required for a tower purifier plant of 63,600 M cu. ft. daily capacity, without purifier houses, is 21,400 sq. ft., whereas we would have needed a space of at least 87,000 sq. ft. for removing the sulphur from 63,600 M cu. ft. by means of a flat purifier box plant (the latter being based on our own flat purifier box plant of 10,600 M cu. ft. capacity), which is more than four times the ground space. If we compare this with the data which is furnished in the report on "Gas-versorgung von den Kohlengewinnungstätten aus" (Deutschen Verein von Gas-und Wasserfachmännern, pages 12-13, Sept. 1927), on the space required for purification plants, in place of the specified length of 4,270 ft., only 980 ft. are required and not quite one-fourth of the former and usual ground area.

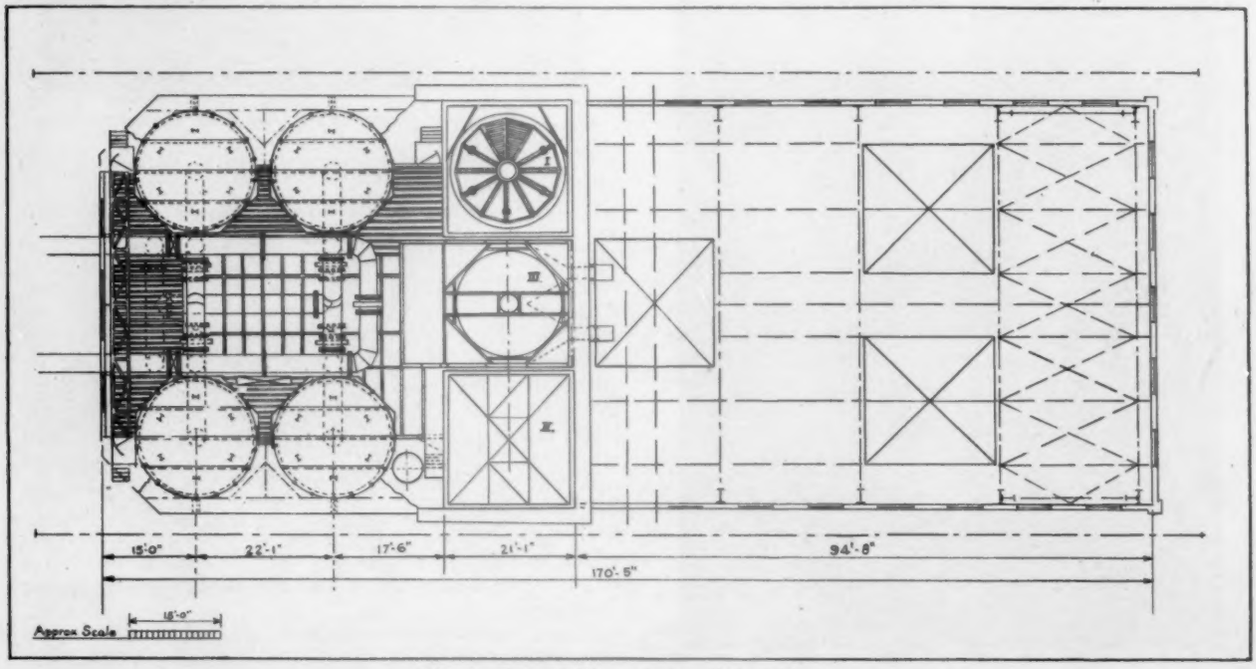


Fig. 6 Ground Plan of the Alsdorf Plant

A purifier is changed in the following manner. The bridge crane, which travels over the plant, lifts the individual baskets with the fouled purifying material out of the tower, carries them to the purifying house and deposits them outside. A traveling crane, which serves the purifier house, picks up the baskets and carries them into the house, where several are set, one upon the other. After the tower has been emptied, reserve baskets, which have been prepared and filled in advance, are carried out of the house by the traveling crane, are picked up by the bridge crane, and set in the tower. The hooking on and unhooking of the baskets is done automatically by the bridge crane operator from his cab. No helper is required even in the purifier tower. Figure 5 shows a basket hanging on the bridge crane. The steel framework visible above the basket is the automatic hooking and unhooking device. The removal and replacing of the baskets is completed in eight hours by the one crane operator and a working party of four men, who are continually working about the purifier plant. In the interval between purifier changes, the working party empties the baskets, which are standing in the purifier house and which contain fouled material, into a bunker and fills them with fresh material and so prepares them for the next purifier change.

A most complete installation of mechanical equipment is constantly available to the four men for the purpose of emptying and filling the baskets, and, also, for discharging, preparing and processing the material. These men, together with the crane operator, also take care of changing the baskets in the purifier towers.

Since the preparation of the new purifying material and the filling of the baskets is carried on mechanically and always by the same workers, a benefit is also derived in that this preparation results in uniformity of grain size and in the filling of the baskets to a constant density of material. This results in even distribution of the gas through the baskets and assures uniform fouling of the material. In order to partially revivify the purifying material in the towers, the usual amount of air is added, which is automatically maintained at a rate proportional to the gas flow.

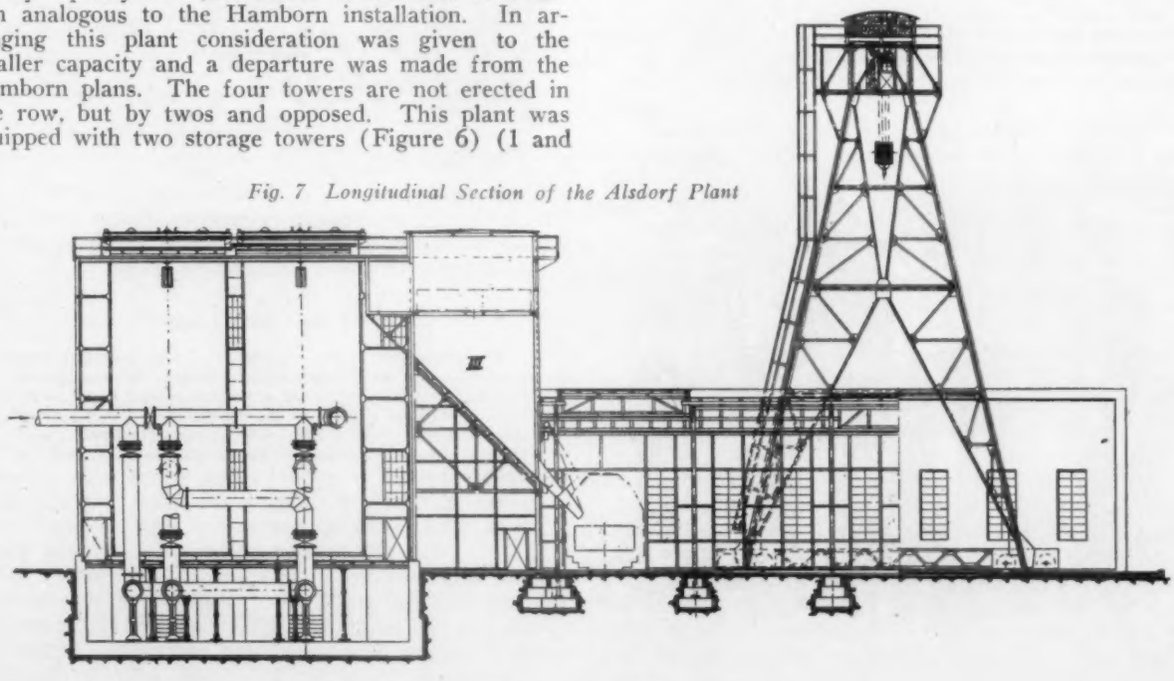
The purifier installation at Alsdorf in Aachen has a daily capacity of 10,600 M cu. ft. and is of construction analogous to the Hamborn installation. In arranging this plant consideration was given to the smaller capacity and a departure was made from the Hamborn plans. The four towers are not erected in one row, but by twos and opposed. This plant was equipped with two storage towers (Figure 6) (1 and 11) of steel and masonry construction, between which a bunker (III) for receiving the fouled purifying material is placed. The purifier house is built as an extension of these storage towers. (Figures 6 and 7). By means of this arrangement it was possible to reduce the size of the purifier house, since the reserve baskets do not reach the house for storage, but are set in the storage towers. In addition, the traveling crane in the purifier house could be dispensed with, since the traveling bridge crane was available for use over the purifying towers, the storage towers, and the purifier house.

Charging and Unloading Procedure

The baskets of fouled material, which are lifted out of the purifier tower at the time of changing the material, are set on top of one another in a storage tower (I). The prepared baskets of clean material are then lifted out of the second storage tower (II) and set into the purifier tower, which can then be switched into the series for use. In the interval prior to the next purifier change, the baskets, which are filled with fouled material, are lifted out of the first storage tower (I, Figure 6) by the bridge crane, are emptied into the bunker (III) for spent material, and lowered into the purifier house through an opening in the roof. Here they are filled with fresh material and then carried to the second storage tower, where they are held in readiness for the next purifier change. The hooking on and unhooking of the baskets is also performed automatically here. Through the medium of the storage towers and the consequent possibility of dispensing with the crane in the purifier house, it was possible to decrease the personnel required for purifier changes by three men. The emptying and the filling of the baskets, the unloading and preparation of the new, as well as the moving of the fouled material, can be accomplished by two men in from twenty-two to twenty-three shifts. Since it is impossible to carry on these operations concurrently, yard labor is drawn upon whenever it is available.

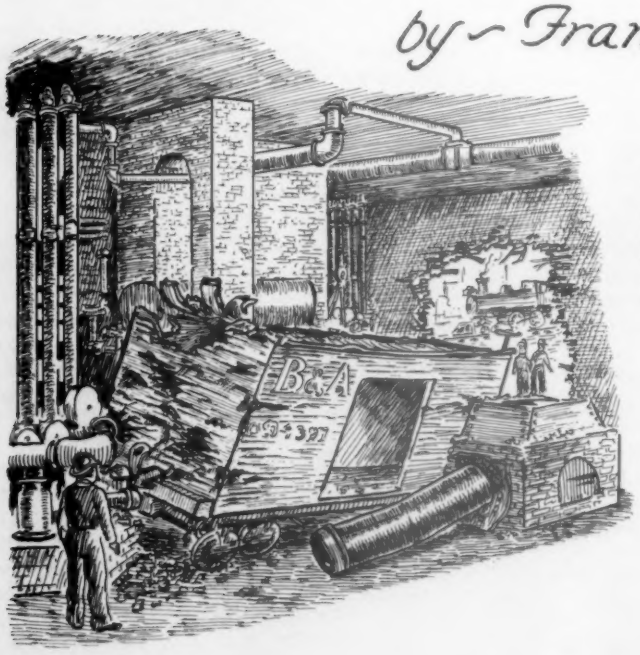
(Continued on page 46)

Fig. 7 Longitudinal Section of the Alsdorf Plant

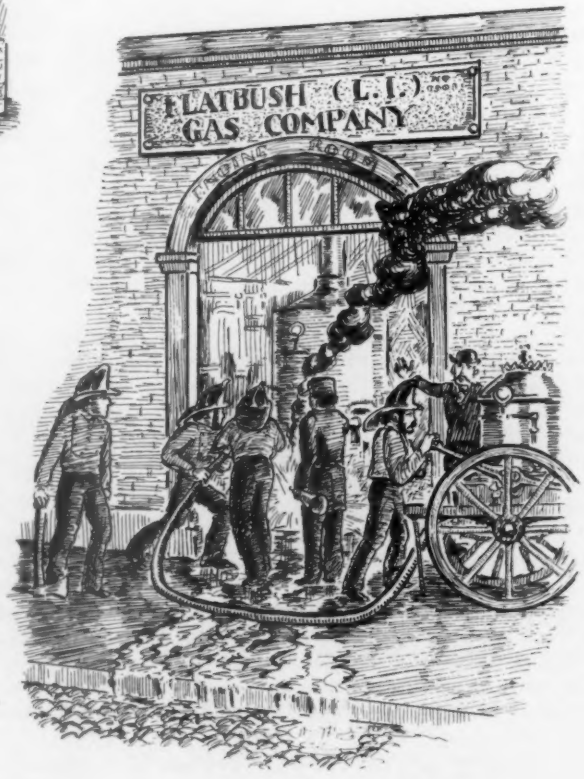


Can You REMEMBER When?

by ~ Frank P. Curley



About as queer an accident as has ever been reported in connection with a gas works plant is that which took place in mid-December at Milford, Mass. According to the record, "on December 16th an unmanageable freight car on the Boston and Albany Railroad plunged into the retort house of the Milford Gas Company, breaking through a brick wall, knocking over an 8-foot chimney, and destroying two brick retort arches, causing a damage of about $700."—American Gas Light Journal, Jan. 5, 1891.



A few days ago a slight fire in the engine room of the Flatbush (L. I.) Gas Company's works was seized upon by the local fire laddies as a fitting occasion to display their valor—and their red shirts. Hose, hand engine and hook and ladder manipulators were out in full force, and Chief Schimpt, noticing that a puff or two of smoke came from the engine room, ordered his men to "turn on the water." Superintendent Armington informed the "chief" that neither his services nor those of his men could be of any particular service at the time, for the flames had been extinguished. The "Chief," however, was not to be put down thus easily, and the water was poured over fireless embers. Having vindicated his firemanship, the "Chief" withdrew. If the firemen had remained away the damage would have amounted to perhaps $15; but as the result of their stern adherence to duty, the damage has been assessed at $150. —American Gas Light Journal, Mar. 2, 1891.

The proprietors of the Altoona (Pa.) Gas Company have good reason to congratulate themselves over the good results that followed their enterprise in engaging Mrs. Rorer to deliver a series of lectures to the residents on the value and convenience of gas stoves for cooking, etc. The lectures were largely attended.—American Gas Light Journal, Mar. 9, 1891.

Practical Advice On Fundamental Equipment Made Available To Small-Home Owners

ON the theory that the heating, plumbing, lighting and refrigerating equipment are among the principle mechanical factors in transforming a house into a comfortable home, the Committee on Fundamental Equipment presented to the President's Conference on Home Building and Home Ownership on December 3rd, what is probably the most inclusive body of data on types and costs of such equipment suitable for small homes that has ever been assembled. The report makes available to the home owner in any part of the country the disinterested advice of experts on the standards of fundamental equipment he should insist upon for his home, how to secure equipment meeting those standards, and how to maintain it once installed.

The Committee's report was divided into four parts, each of which was the work of a sub-section of the committee. The first dealt with heating, ventilation, and air conditioning. As the heating needs of a Los Angeles home owner are obviously different from those of a New Yorker, this section divided the country into fifteen districts, in each of which climate, habits, and cost factors are considered fairly uniform. The sub-committee determined that the cost of one-pipe steam systems in the colder climates range from 15 per cent for $2,000 homes to 10 per cent for $9,000 homes and in the milder climates from 10 per cent for the $1,500 homes to 15 per cent for the $7,000 homes. It gave the costs of other systems in percentage of the cost in one-pipe steam systems as follows:

Two-pipe vapor	125%
Two-pipe hot-water	130%
Piped furnace	65%
Pipeless furnace	35%
Convection heaters or stoves	15%
Air conditioning gas or oil fired furnaces	150%
Air conditioning furnaces with summer cooling	250%

For housing costing $2,000 or less, the committee recommended stoves, convection heaters, or grates because heating systems costing more than 10 per cent of the total cost of the home are out of normal proportion.

Good Insulation Pays

The value of good insulating was emphasized by figures showing that it will save about 30 per cent of the cost of the heating system and from 20 to 30 per cent of the cost of fuel in colder climates. "In an average six room house the added cost of insulation for walls and roof will amount to about $450, the saving in cost of the heating system will be about $225, and the yearly saving in fuel will be about $45.

The committee laid down two basic principles for the home owner to consider in selecting his fuel burning equipment: (1) complete combustion of the fuel within the unit; (2) effective heat transfer to the air or water which is to be heated. It pointed out that better results were secured where the right fuel burning unit is designed for the particular fuel it would use. The bad effects of intermittent operations are still to be overcome in automatic, mechanically fired heating systems.

The prevalent idea that any fuel not burned at night is just so much fuel saved regardless of how much the house may have cooled off during the night was exploded by the committee. Not only is no saving in fuel possible but wear and tear on the heating unit and human discomfort are increased by this much too common practice.

Benefits of Humidity

Indoor temperature during the months in which central heating is used should range from 68 to 72 degrees Fahrenheit, it was stated. The humidity should also be maintained at a certain percentage, the committee said, possibly for reasons of health and certainly to prevent damage to furnishings. This can be accomplished by humidifiers installed in the cellar as an integral part of the heater system. Cooling systems for use in one room in summer can be installed at costs ranging from $500 to $800 and operated for costs ranging from $20 to $50 a season.

The second part of the report dealt with the work of the sub-committee on plumbing and sanitation. As the heart of a remarkably exhaustive survey of plumbing and sanitation ranging from water supply to materials for sinks, the committee presented cost figures for the plumbing installation in three houses ranging in estimated cost from $3,500 to $8,500. In each of these the plumbing installation was laid out by experienced engineers.

"The keynote of the plumbing system is water," the report said, "Without an adequate supply at good pressure and free from harmful contamination, any plumbing system of today is sub-standard." The committee endeavored to point out methods of determining whether the water supply is safe to drink; how to choose pipe most suitable for the water that is to run through it. It has given a complete account of the action of plumbing equipment and compared various types and materials in use today as to efficiency and cost. It has gone to the extent of indicating what are the more desirable waste fittings for bathtubs and lavatories and the details to watch for in selecting various fixtures.

"In schools, offices, and factories, there has been an awakening to the importance of proper light and the conservation of vision, but these matters have scarcely caught the attention of the homemaker," the sub-committee on electrical lighting and wiring reported. "A great improvement can be made merely by increasing the amount of light used, by placing the lighting equipment in proper position with respect to the work areas, and by eliminating unshaded lamps, for they are the

chief causes of glare. Economically it is difficult to produce the condition of too much light. Out-of-doors on a dull overcast day the intensities of light are easily 100 times as great as those found in our best lighted offices."

The kernel of this section of the report is likewise a table of costs for average residential wiring of three classes of houses, costing respectively $3,500, $6,000, and $8,500. The cost for wiring in per cent of structure cost and the average costs per outlet for the same three types of dwellings are likewise given. A third table shows general values for minimum fixtures in the same three types of houses.

The home builder and owner is advised as to how he can guarantee for his home more efficient and up-to-date wiring for lighting and other purposes.

Because there are no efficient refrigerators on the market which can be sold cheaply enough for a house costing not more than $2,000 the committee on refrigeration, has investigated the possibilities of ice-chests, which "are inexpensive and have long been recognized as having a higher degree of efficiency than cheap refrigerators." The committee has cooperated with a manufacturer who has built specially designed, ice-cooled boxes. These are now being tested. "It has been shown that these boxes can maintain temperatures adequate for the preservation of milk and meat with the minimum use of ice."

Families of the low-income group, the committee reported, should not pay more than $15 for a refrigerator. A study of many cabinets on the market within this price range has convinced the committee that the cost of up-keep would be higher than the low-income group could afford and that temperatures could not be maintained low enough for effective food preservation. Yet the committee feels that the saving resulting from storing food at satisfactory temperatures makes some kind of refrigerating equipment desirable.

The committee quotes a survey by the Bureau of Home Economics of the Department of Agriculture which indicates that approximately 60% of American families have ice refrigeration, 2 per cent electric refrigeration; and 38 per cent no means of refrigeration.

Discussing the standards for home refrigerators, the Committee said that, "the efficiency of the cabinet depends more upon the insulation and its method of installation than on any other factor. If a cabinet is to maintain certain temperatures it must be well insulated, of rigid construction, with insulation held firmly in place, of such firmness that it will not settle, and so installed as to make it as nearly as possible, waterproof."

The sub-committee stated the factors that should be looked for and the standards that should be insisted upon in the selection of both mechanical and ordinary ice refrigerators. Plans for the most efficient use of refrigerators of all kinds were likewise given.

Natural Gas In Eastern Canada

A GLANCE at the figures of production of natural gas, given below, for the year 1929 and the first six months of 1930, furnishes a comparison between the production of eastern Canada as represented by New Brunswick and Ontario, and western Canada as represented by Alberta:—

	1929	1930 (6 mos.)
	M cu. ft.	M cu. ft.
New Brunswick	678,456	428,874
Ontario	8,586,475	4,717,000
Alberta	19,112,931	10,782,571
Total for Canada	28,377,862	15,928,445

The above figures show that in the first six months of 1930, Ontario and New Brunswick together contributed about 33⅓ per cent of the natural gas production.

Figures of natural gas production date from 1892, and Ontario was the only producer up to 1903. In 1903 Alberta's first production of natural gas is recorded. In 1912 New Brunswick started production from the Stony Creek field near Moncton and although the field has not been so large a producer as the Ontario fields where, in 1929, there was close to 2,400 producing gas wells, the production has been fairly steady.

The New Brunswick production of natural gas comes from the wells in the Stony Creek field near Moncton. The city of Moncton and the town of Hillsboro have had their domestic and industrial requirements supplied from this source since 1912. These two localities are the only ones supplied and hence the production figure has remained fairly constant. New wells are drilled or old ones are deepened when the supply diminishes in the upper sands, and thus the figure of production has remained practically constant in recent years.

In the province of Quebec, during 1930, two companies were engaged in drilling for oil or gas, in the vicinity of Lanoraie, Joliette county. In this locality and in the adjacent county of Berthier, wells had been drilled in the early days by the farmers to supply gas for their own use. These wells were shallow and had only a short life. One company, between the years 1905 and 1907, put down several wells in the vicinity of Louiseville and was able to supply natural gas to several villages and also piped its product to Three Rivers. The supply of gas, however, was soon exhausted and the company ceased operations in 1908. The present drilling by interests at Lanoraie, is being done in the hope that a commercial supply of gas may be found at greater depths and one of the companies has drilled three wells in all of which a gas pressure was struck at around 200 feet. Two of the wells were capped and the third is being drilled to greater depths.

In Ontario, the chief producing gas fields are located in Kent, Essex, Welland, Haldimand, Norfolk, and Lambton counties. The peak production in Ontario was obtained in 1917, when over 19 million cubic feet was obtained. Since 1921, the production has been around 8 million cubic feet per year. This fairly constant production has been maintained, due to the systematic examination and repairing of the older wells by the large gas distributing companies. Good operating conditions have also been maintained by enlarging the pipe-lines and extending new lines to provide for better and more flexible distribution. The objectionable sul-

phur content of the Tilbury gas has been eliminated since the scrubbing plants using the Koppers process were erected at Port Alma and Glenwood in 1925. New wells are being drilled each year in the various gas fields of the province to offset the falling off in production from the older wells. During 1930 considerable drilling of new wells took place in Tuscarora township, Brant county, and over thirty wells have been brought in at depths around 450 feet. These wells will be tied into the main supply line which supplies the city of Brantford, and the surrounding towns. The two largest distributors and producers of natural gas in the province, The Dominion Natural Gas Co., Ltd. and the Union Natural Gas Co. of Canada, Ltd., have both recently taken steps to acquire a supply of artificial (coal) gas for the purpose of mixing with the natural gas and so augment and extend the present supply of natural gas for many years. This supply of manufactured gas will be supplied by two companies in Hamilton, who have coke ovens in operation, and it will only be necessary to erect a mixing plant and lay short pipe-lines from the coke ovens and mixing plant to the present main natural gas lines. This move will result in not only conserving the natural gas supply in Ontario but will result in the greater use of coal at these coke ovens and the consequent enlargement of the ovens to meet the increased demand. At the present time, artificial gas is being imported into Ontario from the United States to augment the natural gas supply of the Ontario fields. However, when the present plans of the two natural gas companies are put into effect, it will not be necessary for Ontario to import gas from across the border.—*E. H. Wait, "Investigations of Mineral Resources and the Mining Industry, 1930," Dep't. of Mines, Canada.*

Helium of Unusual Purity Produced by Bureau of Mines at Amarillo Plant

THE production of several hundred cubic feet of helium that is 99.96% pure is announced by the United States Bureau of Mines, Department of Commerce. The work was performed in the Cryogenic Laboratory at the Amarillo, Texas, Helium Plant. Although the production of helium of this unusual purity is still in the experimental stage, it is of interest to know that the amount in question was obtained at the rate of 50,000 cu. ft. per day, and that it might be safe to state that the method bears some promise of commercial application.

Previous to the operation of the Amarillo Helium Plant, the average purity of helium obtained by the Army and Navy did not exceed 96%. However, the helium produced during 2½ years of operation at Amarillo, has averaged better than 97.8% and at no time during the present fiscal year has it dropped below 98%.

As an indication of what this purity means to the Navy's airship Akron, it might be pointed out that an increase in purity of helium of as much as 1% increases the useful lift of the ship by approximately 2 tons. Therefore, the fact that the Amarillo Helium Plant produces helium of a 2% higher purity than was formerly obtained, has given the Akron an increased lifting power of approximately 8,000 pounds. In like manner, an increase in purity to 99.96% would also give a similar additional increase over the present lifting capacity.

Safety Obligations

EVERY public utility company is confronted with safety problems requiring individual attention, and in selling a broad safety program the public utility man has a very definite obligation to perform to four distinct groups, each of which imposes upon him a distinct responsibility.

First, we must sell our safety program to the public because satisfactory service is dependent upon efficiency, and safety promotes efficiency. Through customer ownership the public has become a partner in our business, and if we include them in our program of safety education we may anticipate their cooperation in safety and other matters that are reflected not only in the service but also in the dividends that they receive from their public utility investments.

Second, we must sell our safety program to the employees who comprise our organizations, for the manner in which our personnel is trained concerning the safe administration of their duties is reflected in the productivity of their efforts, their interest in their work, their relations with their fellow employees, and their contacts with the public.

Third, we must sell our safety program to supervisors and foremen because in their hands rests the responsibility of efficient employee performance, and the manner in which they perform their duties may be a constant example to those working with them.

Fourth, and perhaps most important of all, we must sell our managements and impress them with the fact that ideas and practices have been developed which are workable and which can and should be placed into operation.

It seems to me that a most complete and efficient program has been mapped out by the Safety Council, the safety committees of the trade associations, and the local companies for the selling of the safety idea, but all of these plans and ideas for promoting safety consciousness are like the proverbial mule which is absolutely useless unless somebody can be found who will put him to work. An executive of the American Gas Association said to me recently that too many safety plans have been set up as a parallel activity to the other departments of the companies, and have not been made a part of the company's operations as a whole.

We must remember that the public utility business constantly is becoming more complex as new uses are found for power and as service demands continue to increase, and the safety plans that have been employed by these companies have consistently shown marked improvement. Despite the advances that have been made, there still is considerable room for improvement in reducing accidents, and none of us in the utility industry should be satisfied until every possibility for the least accident has been eliminated.

With all of the media that may be made available for selling our safety programs—the newspapers, employee magazines, different forms of advertising and publicity, slogan campaigns, posters, radio, safety campaigns, motion pictures, first aid teams, employee and customer training—all of these are of no avail unless executives and department managers who want employees to practice safety are first completely sold on the safety idea. They must cooperate in making use of all the available media in a *constant* campaign for accident prevention; rather than be content with the periodic campaigns which are revived occasionally because somebody has been suddenly reawakened by the loss of a life or even a greater catastrophe—as a result of carelessness.—*Jos. W. Hicks*

The Tower Purifier Installation

(Continued from page 41)

The economy of the Hamborn tower purifier plant, as compared with an equivalent flat or box purifier installation with eight layers of purifying material, is shown in the following comparison in which the cost of electric current and expense are omitted, since these are the same in both cases.

	Tower Purifier Plant	Box Purifier Plant
Daily capacity M Cu. Ft.	63,600	63,600
H_2S content, Grains per 100 Cu. Ft.	219 to 262	219 to 262
Purifier changes available per year	24	24
A		
INSTALLATION COST		
Purifier installation, including conveying and material preparation equipment and purifier buildings, including the storage towers with the tower purifiers	$378,000.00	$552,000.00
B		
ANNUAL CHARGES		
Investment Costs:		
Interest, depreciation and maintenance (15% of the installation cost)	$ 56,700.00	$ 82,800.00
LABOR CHARGES		
For changing purifiers, unloading of new material and loading of spent material, including the filling and emptying of baskets with the tower purifiers	$ 2,450.00	$ 9,100.00
	$ 59,150.00	$ 91,900.00

Above costs computed on reported costs with rate of exchange in effect April, 1931. R M = 23.80c.

The above calculations on economy show that substantial savings may be obtained as compared with a box purifier plant. In addition, an enormous saving of space resulted which was not evaluated.

From this presentation it will be seen that the advantages initially outlined have been satisfactorily met.

Erection Details

In concluding this presentation we will briefly outline the method of erecting a tower purifier installation. Figure 8 shows the second section of the construction at Hamborn, which has a daily capacity of 21,200 M cu. ft. The individual towers were assembled and riveted adjacent to the foundations. The assembling of each tower was begun by erecting the upper section upon which the cover had been laid and fastened. Section after section was erected from beneath by using the available bridge crane, so that the riveting and caulking might be performed at ground level. After the shell was completed, it was set on the foundation by the crane and fastened to the foundation slab. The baskets are delivered with the various parts finished and ready for assembly. The plate and tray carriers are riveted, on the site, to the central pipe section and the outer casing is fastened to these carriers. Several completed baskets are shown on the rear foundation row (Figure 8), as well as a portion of a group of towers.

The structural steel wall framing on the completed building, which is visible in Figure 8, is covered over with boards. Since the immediate extension of the purifier plant was decided upon at the time that the first portion of the plant was being built, the masonry work was not performed. As soon as the extension which is under construction is completed, this end wall framing will be removed and re-erected across the end of the last two purifier towers, so as to enclose the whole installation.

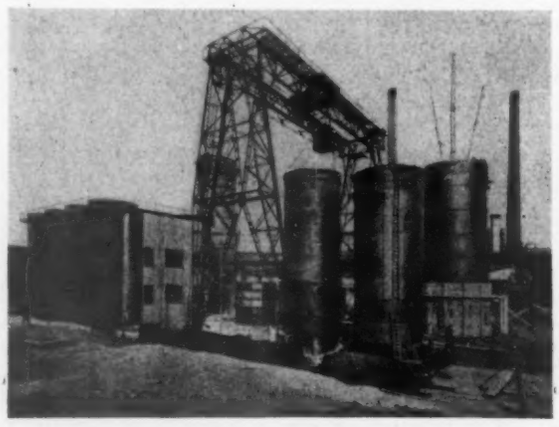


Fig. 8 Hamborn Plant. Erection of the First Towers of the Second Series

It may be interesting to know what length of time was required to complete this addition of purifiers to increase the daily capacity from 21,200 M to 42,400 M cu. ft.

The contract for erecting the plant was placed January 2, 1931. The construction work was started and the excavation begun on January 8, 1931. The foundations were completed on February 15, 1931. The first two towers were erected on March 11, the next two on March 18, the fifth and sixth on March 25, and the last two on April 12. In accordance with the contract, the entire plant should be ready for operation on April 15 and today (April 2, 1931) it appears that this date of completion will be met by the contractors.

New Phases of Management Problems

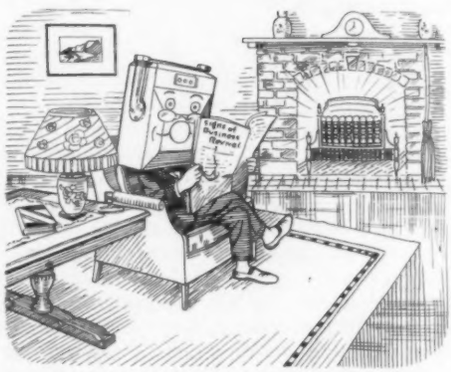
(Continued from page 25)

through the year, regardless of weather.

Corresponding problems continue in selection of raw materials, in the choice of the most suitable heating value when mixed gas is supplied, and in all other phases of our fundamental technology. When the engineers are not busy at these important tasks they will unquestionably find themselves greatly in demand by the merchandising manager to visit the works, the shops, and the mechanical plants of industrial and commercial prospects. The visit of an engineering representative to such prospective customers' premises often will do more to "sell the job" than a dozen calls of the best intentioned non-technical salesman.

But when all is said and done, the industry will progress most rapidly and will lay for itself a foundation of greatest profit in the future only when it recognizes, studies, and ultimately solves the great burning question of the day—How can we better distribute the work and the wealth of America so that prosperity may be shared reasonably by all? This is a general question; but it is one which has real importance for all, even for the non-competitive public utility.

AMERICAN GAS MERCHANDISING ALMANACK



1932

February

FEBRUARY has one more day this year which gives the gas man a day of grace in which to make his monthly quota. February gets us away from the holiday hangover and gives us ground hog day, Lincoln's Birthday, Washington's Birthday and St. Valentine's Day.

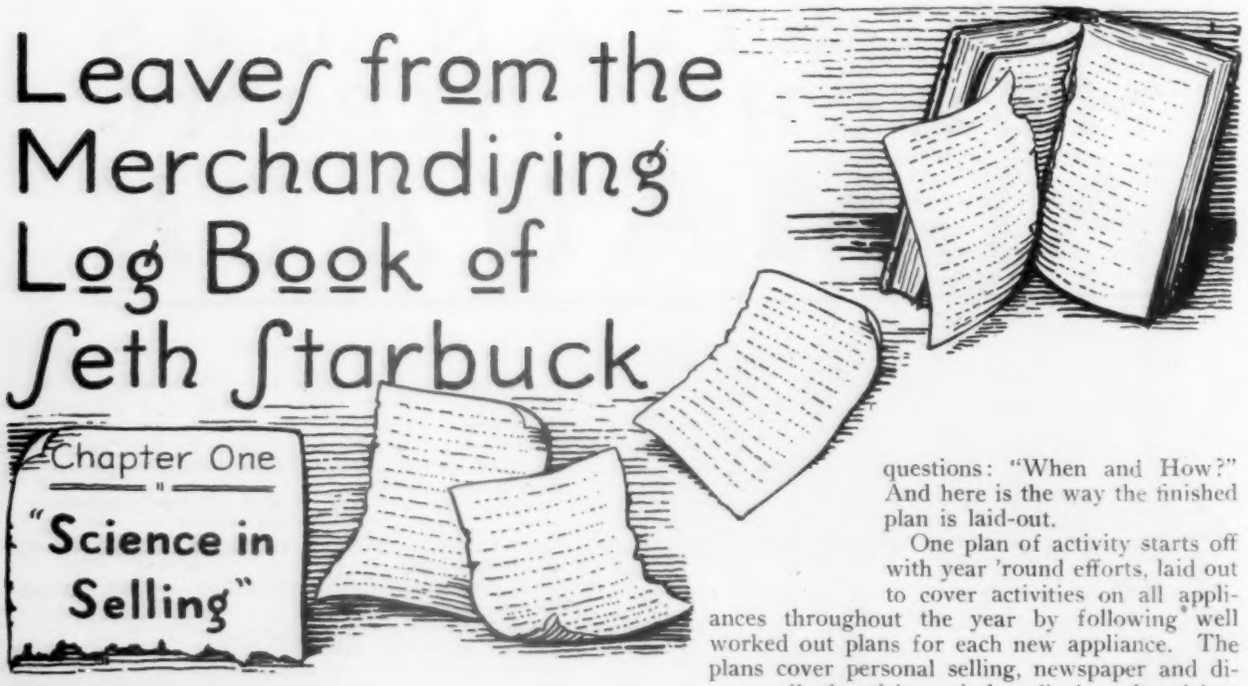
February window displays may be built with a tie-in to the birthdays of the two great Americans or St. Valentine's Day. Gas appliances and gas service have done much to emancipate the American housewife and February affords the gas man an ideal opportunity to play up any home labor saving appliance from this angle.

If historical displays are to be built, national colors, red, white and blue, may be used to secure decorative effects. If you are staging an annual stock reducing sale or clearance, use red, yellow or green in your windows and in your store, having special price tags in the same colors. At this moment it seems that what we said in this column one year ago may reasonably be repeated: "You'll get business if you'll go after it. Do not let down on your advertising."

The refrigeration activity conducted during 1931 sold a million refrigerators (electric alone), a 33 1/3% increase over 1929 and spurred-up a movement to sell another million this year—and now we hear that the electric range folks are to stage a co-operative marketing plan. Planned co-operative selling sure gives folks the urge to buy, and as we have so often remarked: "We wonder why the gas range folks don't put on a nation-wide selling show?"

1—Mon.	Nevada gets its first telephone exchange at Virginia city, 1882. **Everything out for a general try-out of your 1932 plan to get more sales per meter and whip your organization into shape.**
2—Tues.	Ground Hog Day. No matter what he does, keep plugging away at your plan. **Check-up results of the first day of February.**
3—Wed.	Moultrie victorious over British at Port Royal, S. C., 1779.
4—Thurs.	**Check to see if any results have come in from your bill insert advertising.**
5—Fri.	**Read your newspaper advertisement and ask yourself: "Would that ad sell me?"**
6—Sat.	Aaron Burr, born, 1756. **Talk to your floor sales people; ask what folks think and say about your merchandise. Check to see if your displays have been the means of bringing folks into your store.**
7—Sun.	**Read your advertisement if you have one—then forget about your job until tomorrow.**
8—Mon.	Schenectady, N. Y. burned in 1690. **Get things moving with a bang; see how systematically your men are covering their territories.**
9—Tues.	William Henry Harrison, 9th President, born, 1773. **Plan your advertisement for Thursday's newspaper.**
10—Wed.	**Go over plans for change in your window display, especially if you are going to put in a St. Valentine's window or one tying-in with Lincoln's birthday.**
11—Thurs.	**Have a chat with as many of your salesmen as you can with the idea of learning how well they are informed about the appliances they are selling.**
12—Fri.	The great emancipator, A. Lincoln, born, 1809.
13—Sat.	General Ethan Allen died, 1789. **Go over the week's activities with the view of pulling in various loose ends and keeping your plan in order.**
14—Sun.	St. Valentine's Day.
15—Mon.	**Plan to go over with those responsible for stock, stock conditions with the view of having stocks on hand for March activity.**
16—Tues.	Li Hung Chang, Chinese statesman born, 1823.
17—Wed.	**Get your advertisements to newspapers and spend some time in re-reading the advertisement you plan to open your March activity with.**
18—Thurs.	**Check over display material that you will need to complete plans for window and store displays next month.**
19—Fri.	Adelina Patti, singer born, 1843.
20—Sat.	Panama-Pacific Exposition opened, 1915. **Spend the day in going over results this month, giving some thought to weaknesses in your plan with the view of strengthening them before you launch your March activity.**
21—Sun.	General Sherman buried, 1891.
22—Mon.	Washington's Birthday.
23—Tues.	**Rearrange your windows and store display with the idea of clearing up all merchandise used in connection with your February activity during the next week.**
24—Wed.	**Again check to learn how consistently your salesmen are following upon your plan and how they are handling territory.**
25—Thurs.	Sixteenth amendment to Constitution. Income Tax ratified, 1913. Whatta life!
26—Fri.	**Newspapers should carry last ad featuring February offers and urging folks to take advantage of them at once.**
27—Sat.	**Check-up on general results of your activity.**
28—Sun.	A day of rest and one to get into the open, to pep-up for a new month.
29—Mon.	A day to tie-in all results and to check over all features of your February activity and those that will be staged during March.

Leaves from the Merchandising Log Book of Seth Starbuck



Chapter One
"Science in Selling"

SCIENTISTS in poultry culture have recently discovered that when subjected to the infra-red rays of the new mercury type electric sun lamp chickens work over-time in the matter of egg production. And strange as it may seem these same scientists have found that the most effective way to introduce this added "pep" in production is by subjecting madam hen's pedal extremities to the rays cast by the lamp.

Scientists in merchandising home appliances too, strange as it may seem, in this year A.D. 1932 in checking and double checking over the most effective manner to make two sales grow where only one grew before are looking to the pedal extremities of the salesman with a view to a solution of the age old problem.

Any number of merchandise men have come to the conclusion that any plan that does not contain a charted course for salesmen to follow is hay-wire and will not produce the desired results.

Some of the 1932 set-ups are so different from those in vogue since 1919 that the "can't-be-dones" are already proclaiming them as radical. They may be radical yet, as we view it, they are going to be the means of getting many a merchandiser out of the red.

THE plans—whatever may be said of them by those who have not taken the time to study them carefully or to test them—in our humble opinion are about the best ever. They have cut out all the ballyhoo, they have considered the job that is to be done and set about to plan to do it. The first equation they consider is the human equation; they consider the customer that they hope to have and the man who is to make him; they have considered territories, transportation, the age of wheels, style, beauty, efficiency, durability, design, price, terms and customer wants.

With a batch of data on these subjects they have set about to study the salesman, with the result that a decision was reached to work out a plan of action that would put pep into that individual's pedal extremities and sell him on the idea by showing him how he could earn a larger income. Having decided on what to do the men who devised these plans then considered the questions: "When and How?" And here is the way the finished plan is laid-out.

One plan of activity starts off with year 'round efforts, laid out to cover activities on all appliances throughout the year by following well worked out plans for each new appliance. The plans cover personal selling, newspaper and direct mail advertising, window display advertising, store lay-out and arrangement, and employee cooperation.

AS an illustration of how the plans are laid out we will look at the gas activity. This activity starts off with an announcement to employees and salesmen that the sale of ranges is highly desirable, that new users should be striven for and that present users' equipment should be brought up-to-date by selling them a 1932 model gas range. The program calls for an advertising campaign to start in March by way of advertising and displaying a complete line of the new model gas ranges. This activity is planned for the sole purpose of announcing that the gas man is keeping abreast of the time and that 1932 has brought a brand new line of gas ranges.

During the first part of April the program calls for Public Cooking Schools, the latter half of the month being devoted to semi-public cooking and home economics demonstrations and lectures, with great stress put on the advantages of gas cooked foods. These lectures and demonstrations will be conducted before clubs, church groups and women's organizations. May will see a special activity in full swing. This activity will be in the nature of an old stove round-up. June, July and August, will be "regular" months and, aside from a close follow-up of prospects and a weekly gas range advertisement in the newspapers featuring the advantages of gas cooked foods, no special efforts will be made on gas ranges.

Starting with the first week in September a special activity will be put into motion for a period of thirty days. This activity will use as its theme song a low down-payment and a special plan of extended monthly payments. October will be another "regular" month, while in November the play-up will be made on a "Thanksgiving Special Sale." December will feature the advantages of gas for cooking all of the many things that the home manager provides for the family during the holiday season. December plans may also include a special "Gift to the Home" activity, wherein a cooking or baking set may be given with the gas range.

ASIDE from laying out a complete program for "the bread-and-butter" line of appliances in this manner as well as complete plans for intensive effort on a number of load-building appliances, the general plan considers salesmen and territories.

Territories will be tightened-up to the extent that one thousand meters will be assigned to each service-salesman. This service-salesman will work on a salary-commission basis and he will be held responsible for all residents in his territory—customer and non-customer alike. His duties will consist of servicing-serving-selling, reading meters, introducing new appliances, supplying catalogs and distributing advertising, quoting prices, adjusting and inspecting merchandise and selling.

The plan of this man's operations are mapped out for him in advance, and he is so scheduled that a portion of his time each day is definitely assigned to the various phases of his many sided job.

Territories are so laid out that a service-salesman may cover them once each month, seeing every prospective customer as well as all present users of gas service. The service-salesman reports at the office each morning at eight, attends to whatever duties he may have, secures new leads, etc., and departs from the office at not later than eight-thirty. He remains in his territory until four-thirty when he again reports back to the office to finish the day's business. During the day he is required to "call-in by 'phone" once in the morning and once in the afternoon.

Salesmeetings, unless of a special nature, are five minute meetings held in an informal way each morning before the men leave the office for their respective territories. All service-salesmen are required to report at the office by twelve noon on Saturdays, and any special or unfinished business is taken up and completed between that hour and one o'clock. Service-salesmen are not required to do any night work, although the plan dwells on the value of such work and its advantages to the man who has an order hanging fire.

AS has been mentioned above, the men all cover their territories once each thirty days, and as they do so on foot they do it thoroughly and systematically. The result is that they make more calls per day, more paying calls, get better acquainted with every one in their territories and cause two or more sales to grow where one grew before, especially where sales effort was applied on the "skip-stop-plan" whereby a salesman spent most of his time getting from here to somewhere else.

Plans modelled along the lines outlined here have been in successful operation for some time and we hope at an early date to be able to tell readers of the *American Gas Journal* more about such plans; what is being accomplished in creating new uses for gas service; how new users are being secured; how men are chosen for the work; what effect the plan is having on better public relations and just what the results have been where this new type of sales organization has been used to put-over a special drive.

Starbuck's Rebus—Answer on page 64

An Old Gas Man Asks—"Have We Turned The Corner?"

PENCILS, adding and calculating machines and slip-sticks have been working over-time for a good many months now. Stocks have been scrutinized, inventories have been investigated, turnover, rents, taxes, light, heat, delivery, education of employees and a hundred and one other factors that enter into and spell the difference between merchandising profit and loss have been placed on the defensive and it seems that some of these items have been taken to the cleaner.

Men who have heretofore regarded red ink as a necessity to selling home appliances have come to the conclusion that it has no business at all in modern merchandising. Utility men in every direction have issued orders or are making ready to issue orders to the effect that the merchandising department must stand on its own feet, earn its keep and show a profit. Red ink is unpopular.

Rents are higher than they should be due to the fact that the larger operating companies cannot get along with a single store today; the decentralization of populations, folks moving to the suburban sections, call for neighborhood stores and this means more store rental. More stores mean an increase of stocks, personnel, heat, light, display material and many other things that go to make up operating expenses. Operating expenses go up and margin of profit goes down. This calls for more sales, and more sales call for better educated and more sales-minded employees. With these things enters lower priced merchandise and cutting down of net return per sale which calls for a speeding-up of sales. So we enter the first quarter of 1932 with a great deal before us, but thanks to all the figures that have been compiled and to the study of the various factors that make or break a merchant, it seems that no matter what may be ahead of us, we are going to be in a very much healthier, happier position than ever before long before New Year's Day, 1933.

Stock control, with more frequent purchases, the problem of proper utilization of floor space, proper lighting, discontinuance of stock-room sleepers, better advertising, better informed and trained salesmen, proper pricing, planning, display, and customer cultivation are some of the things that are going to put that 1932 Gas in the class of leading merchandisers.

Keeping Interest from Lagging in Cooking School

C. B. SERVICE

"DON'T let your cooking school become monotonous, even to yourself." Thus advises Barbara Badger, Home Service Director of the Utah Gas and Coke Co. "If it becomes monotonous to you it will certainly become monotonous to your audience."

Miss Badger certainly needs no lessons on interesting cooking school plans. She has never been short of ideas for Valentine's parties, Brides courses, Mother's Day programs, Winter campaigns, Christmas, Thanksgiving, or other holiday school-events.

One of her most interesting programs consisted of a series of book reviews given on the most popular pioneer novels written about the old west. In each was depicted the sacrifices of a pioneer mother. "The books were chosen to show the spirit of motherhood as existing in the days when mothers had little of the material things to give but an abundance of love and hardship. The reviews were given by the wife of our sales manager, who is an authority on books. She reviewed Grandma Brown's One Hundred Years, A Lantern in Her Hand, Six Horses, and Cimarron to an audience which included many of the pioneer daughters and one pioneer couple who came in unobtrusively and sat down on one of the front seats. In addition to the book reviews Elizabeth Matchett Stover gave interesting high lights of the authors' lives. She vividly portrayed the sacrifices and perils the mother in each book went through.

When the book reviews had been given, individual old-fashioned strawberry shortcakes were served to all of the guests present.

A Fine Attendance

Invitations to this matinee conducted in the Salt Lake City Cuisine auditorium of the Utah Gas and Coke Co., were sent out to the Camp President of the Daughters of the Pioneers and also to the members of the Relief Society. Personal letters were sent to these organizations, and there was excellent attendance—"the best attendance of the year," according to Miss Badger. It comprised young and older people alike and was an entirely new crowd from the regular Thursday audience.

When special programs have been planned, Miss Badger increases the amount of the menu for serving so as to include enough for between 150 to 250 people. If the program is an ordinary one the amount is lessened to comprise enough for the average Thursday crowd. "Usually when we are planning a special program we serve something that will cut into smaller pieces to accommodate the largest number of people."

Another very successful school was made up of soon-to-be-married young women. Names were secured through the society columns. To these was sent a personal letter telling about the classes and asking them to enroll as soon as possible. Membership was to be limited to fifty. Before the letters had barely reached their destinations eighty-seven girls had enrolled! And all were high-type girls—those who had taught school, were in business, or were society girls.

Classes were conducted from 7:30 until 9 o'clock, each Monday evening. An entire course in cooking was given. During the classes each girl made a "Bride's Book," which contained seven chapters, each chapter tying in with the week's lesson. Each week a new chapter was added to the book. The pages and cover had been previously printed for the Utah Gas and Coke Co. expressly for the Bride's Class members. They were merely assembled by the students.

Advising the Bride-to-Be

The first week the girls were given the attractive blue paper cover and Chapter one, "The Bride's First Primer." This chapter contained three departments: one, the Heart of the Home which dealt with the equipment necessary to the modern kitchen. In detail it described the best type of water heaters, gas ranges, refrigeration, etc., bringing in the part that the Utah Gas & Coke Co. could play in their perfect equipment. Next it took up the general equipment and divided it into—1. necessary equipment, 2. almost necessary, and 3. nice to have.

Other departments of this chapter were: How to Buy (proper selections of food and reasons for their selection); Methods of Cookery (a general summing up of the proper methods to go about the art of cooking a well balanced meal).

The second chapter was entitled, "A Guide for Planning Balanced Meals." This included menu planning and breakfast suggestions.

Chapter three was "Steps to Success in Cake Making," all recipes in which being adapted to the high altitude of Salt Lake City. The chapter gave reasons and remedies for cake failures and many tricks on being "Cake Clever." With the exception of this cake chapter all recipes were designed to include portions for two people which made the book doubly popular with the young brides.

Good Educational Matter

Chapter four was devoted to "Vegetable Cookery." This included salads and a time table for cooking vegetables.

"A Place in the Sun For Your Pies," included methods and general directions for making plain pastry. Recipes in this chapter were of the old-fashioned pies "like mother used to make" with the modernistic touch tending to make them "just right" for the husband whose mother was a good cook.

"What Price Silk" was the intriguing title of the sixth chapter—"silk" being the "little nice things to eat."

The recipes followed and were given under the headings "Silk from our Gas Refrigerator," with parfaits, ice cream, chocolate sauce, caramel sauce, etc., given as piece of "silk;" "Silk as Relish," with recipes for mint jelly, tartar sauce, cranberry frappe, crystalized mint, as illustrative pieces of "silk." "Silk for the Candy Box and Tea Table" included Fondant, chocolate fudge, penoche, divinity, after dinner mints, bonbons, Gypsy Burrs, salted almonds, candied orange peel. "Miscellaneous Pieces of Silk" were potato chips, timble cases, meringue kisses, ginger ale punch, grape juice, lemonade, and hot spiced lemonade.

This chapter gave Miss Badger an excellent chance to demonstrate the company's complete equipment. The

refrigerator, the gas range, each came into prominent use during this lesson.

"Sophisticated Dinner Tables," was the last chapter. It dealt with linen for the dinnertable, formal and informal, linen for the formal and informal luncheon, and for the bridge table; also proper setting of tea and breakfast tables—linen, silver, glassware, etc.

The conclusion of this last chapter was devoted to dinner menus which included "one-dish meals," "Dinner menus for the ice box," "dinner menus for the cooking top," "dinner menus for the broiling oven," and "dinner menus for the oven."

"With this last chapter," stated Miss Badger, "we wanted to end up with the use and advantages of natural gas instead of 'table setting.' For securing this effect, therefore, we secretly prepared and placed in the oven an entire meal which was cooking unknown to the girls, all during the last lecture period. We chose foods that had been prepared during the previous lessons. When the table was all set and the lecture on china, linen, and silverware with its proper uses was completed, we took the entire dinner out of the oven much to the surprise of the students. In this manner we illustrated graphically, the dependability of natural gas for cooking. . ."

Results of Classes

"These classes for housewives-to-be accomplished several things," according to Miss Badger. "They definitely put over the idea with those eighty-seven girls, who rarely missed a class, that there is other fuel besides electricity. We used the most modern gas equipment obtainable in our lectures and realized sales of ranges to several of the students during the course.

"Another advantage of the evening classes was the fact that the boys invariably called for the girls and came in on the sales floor to wait. Thus they had a chance to look over the equipment and a salesman was always on the floor to contact them."

In bringing out the qualities of the range used, Miss Badger planned a strawberry ice cream pie to be baked for an evening class. The shell of pie crust was insulated with powdered sugar on the bottom, fresh strawberry ice cream filling placed in it and the top insulated with meringue. When it had been in the oven for fifteen minutes at a temperature of 400 degrees, it was taken out and cut. When the girls realized that the ice cream was as solid as before it reached the oven they were amazed and Miss Badger used this opportunity to state that the oven of the stove used was insulated in just the same way.

A Novel Idea

"The talking oven is another novelty which breaks the monotony of the cooking school matinees and evening classes for both attendants and ourselves," stated Miss Badger. "It would all get very uninteresting if we didn't plan a diversion occasionally. The talking oven proves a big diversion. We rigged up a loud speaker arranged on the pipes back of the range's oven. The range was placed near a window and a piece of garden hose attached to the loud speaker and hung out the window. The garden hose reached through another window into a room adjoining the auditorium. Here Miss Florence Bodin, my assistant, was located to speak for the oven.

"At just the right moment Miss Bodin would make it a point to either recognize some member of the audience and speak to her, or the 'oven's' remark is addressed to me."

Strange things happen today and audiences are puzzled and not a little frightened when the talking-oven first pipes up, according to Miss Badger. It is quite a thrill for Mrs. Blank to be addressed by the oven and told that that object is glad to see her in the audience, hoping some day to be allowed to grace Mrs. Blank's kitchen!

"We use the talking oven to explain its own features rather than to include the explanations in my lectures. When I reach a point where the oven must be explained, it starts out in a voice coming directly out of the closed oven door and tells its own attractions much more effectively. When giving a demonstration before school children this is an exceptionally good way of holding their interest."

Cream puffs are used as an effective method of explaining the oven, according to Miss Badger. When the cream puffs have been in a certain length of time the oven will state that they are "getting brown." "Watch them puff up," says the oven. And through the entire process of baking, the progress of the cream puffs is recorded by the oven.

Alice in Wonderland and Cinderella are both stories used frequently to break the monotony of routine cooking matinees. Alice may fall down a gas well just as easily as she may fall down any other kind of hole in the ground, and what she sees down this well would equal anything found in the famous book. For an educational lecture on methods of drilling and piping in natural gas, this story is ideal.

"The modern Cinderella may cry because her bread has burnt but the fairy Godmother comes along and waves her wand over the old type of cooking range turning it into a beautiful modern gas range. And now the woman is very happy because she no longer has to struggle with old fashioned methods of baking!" This delights women and children alike.

74 Husbands Freed From Furnace Tending By Gas Heat Salesmen

DURING October 74 husbands declared their independence forever from the task of furnace tending. The "Mrs." and the Company's House Heating Salesmen united their efforts and the result was the sale of 74 gas heating installations.

In District "C" the Salesmen convinced 30 homeowners that gas heating was best and sold burners and gas designed equipment. In "D" 29 installations were made. Down in District "F" four more spouses declined to have anything more to do with furnace tending. The remaining districts figured in the sale and contributed to the total.

A quota of 63 new installations was set for the month. Of the 74 jobs sold, 54 were for conversion burners and 20 were for gas designed boilers and furnaces.

At the end of October a total of 188 house heating installations have been made this year. Of these 96 have been conversion burner sales and 92 have been boiler and furnace sales.

Several salesmen sold more than four installations during the month. Two District "C" men, H. R. Sorenson and J. Brown, stand out, having each sold six gas heating jobs during October. Other leaders in the sale were: R. Corbett, "D"; J. W. Kurtz, "D"; E. V. Rosengren, "D"; A. M. Montzheimer, "F"; and Jack Welch, "E". Each of these men sold four installations.
—H. V. Losey, Public Service Co. of Northern Illinois.

Home Service Builds Sales

MRS. MARY N. HALL

Elizabethtown Consolidated Gas Company, Elizabeth

THE Home Service Department of the Elizabethtown Consolidated Gas Company was organized sixteen months ago. The results obtained by the department are not conclusively indicative of what the company may expect in the future, but we feel that up to the present time satisfactory results have been accomplished and that home service has justified itself. As proof of this the personnel of the department is now being increased from one to four. The following paragraphs present a resumé of the work done by the department since its inception and a general plan which it expects to follow during the coming year.

Always On Lookout

We are constantly looking for opportunities to interest the customer in new appliances when making home calls. In an effort to show tangible results a record is kept of the prospects turned over to the sales department by our one worker. Sales resulting from these prospects for the period January 1, 1931, to October 31, 1931, follow:

Ranges:
- Seven—replacements
- Three—new customers

Tank Water Heaters:
- One—additional equipment

Automatic Storage Systems:
- One—replacement of tank water heater
- Two—additional equipment

Electrolux—one

Gas Furnace—one

We are entitled to full credit for these sales, which amounted to $2418.70. In addition recognition should be given for the work accomplished in helping close other sales. The following example serves to illustrate this.

Early in the Spring our house heating engineer called on a prospect for a gas-fired hot-air system. As a result of this call the prospect promised to call, after he returned from his vacation, to have his house measured and receive an estimate. On his return in August he purchased an automatic water heater from the company, and the home service representative made her regular follow-up call. During the ensuing conversation the customer mentioned the fact that he would like to heat his house with gas but could not do it until the following year, because he intended remodelling and refurnishing his home and did not feel that he could stand the additional expense just then. Our representative grasped this opportunity to suggest that it would be better to make the installation while remodelling the house and thereby protect the new furniture and draperies from all dust and soot coincident with his present fuel. As a result our representative left with a definite appointment for the househeating engineer to call. Within on week the customer was sold a $900.00 gas-fired furnace, and today Mr. —— says: "No more shoveling coal for me, and if I ever have to deny myself anything it will not be the gas furnace."

In many instances our salesmen make a sale when our price is higher than our competitors by using our home service as a clinching argument. Any tendency on the part of the salesmen to use high pressure methods has been corrected, for they are aware that, in the follow-up call, we will give instructions and information on only the actual performance of the appliance.

An interesting side-light which has been brought out in our follow-up calls is the fact that nine out of ten housewives worry about their future gas bills after the purchase of an automatic storage system. We tell them frankly that their bill may be somewhat higher but that the increased comfort and convenience which they will derive from their hot water heater cannot be measured in dollars and cents. When we leave, we feel that they are satisfied and happy with their purchase, and to this date we have not received a high bill complaint on any automatic storage system where a follow-up call has been made.

Opportunity for Call-Back

When ranges are installed, our fitters do not test the oven regulators. This work is done by us when making follow-up calls, since it gives us time to talk to the customers. We want this opportunity to find out, if possible, how the customer feels toward other appliances which she does not already possess. When our department was first started, the service department was skeptical about a woman's qualifications for this work. This doubt has been dispelled and today we have excellent cooperation from the service department. The fitters now seem to take more pride in their work than formerly and at times even ask us to go out on jobs when they find it impossible to please the customer.

Home service survey calls have been instituted for the purpose of acquainting the customer with the latest models of all gas appliances. At the time of the call inquiry is made to ascertain whether the customer is satisfied with the service which the company is rendering. Any necessary minor adjustments are made. Orders are issued to the service department for adjustments or repairs that may be considered necessary to improve the efficiency of the appliances. A card record is kept of the make, style and condition of all appliances in use, the customer's reaction to the call and her interest in any new appliances. Sales are not discussed. During the interview, however, the worker will often find opportunity to create the desire for ownership of an up-to-date appliance or for one which the customer does not yet possess but which will help to lessen the burden and drudgery of her daily household tasks. Each week a list of these cards is tabulated and handed to the sales department. This list is made up in two sections, one which shows the appliances not in use in these homes and which may be used later as a basis for canvassing or solicitation by mail, and the other which shows those customers who have definitely stated that they are interested in purchasing a new appliance.

We have not decided at this time whether or not the survey work will remain a permanent feature in the Department, as it was only started on November 10th

of this year. We have only one woman making these calls, but at the time of this writing are well pleased with the results achieved. The following data for the period from November 10th to 24th inclusive, may be of interest.

Contacts	194
Sales Prospects	16
Known instances of customers visiting showroom after call has been made	5
Sales resulting from these visits	2
Adjustments made by worker	19
Adjustment orders issued to Service Department	10
Repair orders issued to Service Department	11
Appliances in use:	
Non-insulated ranges with regulator	32
Non-insulated ranges without regulator	151
Insulated ranges with regulator	11
Automatic Storage Systems	45
Instantaneous Water Heaters	4
Tank Water Heaters	116
Pot Stoves	14
Electric Refrigerators	71
Gas Refrigerators	2
Electric Ironers	22
Gas Ironers	4
Space Heaters	3

If it were possible to estimate the tangible value of the work accomplished, as described in the foregoing paragraphs, we feel certain that the net results of this department would appear on the Company's records in HEAVY BLACK instead of red.

Courtesy New Jersey Gas Ass'n Bulletin.

How Exhibitors Are Meeting The Trade Show Problem

ALTHOUGH trade shows appear to be accepted as helpful to business, the opinion of exhibitors in many industries is that methods of conducting these shows must be brought into line with today's changed conditions if buyers of space are to be assured of adequate returns, according to a survey just completed by the Policyholders Service Bureau of the Metropolitan Life Insurance Company. The results of this survey have been published in a report entitled "How Exhibitors Are Meeting the Trade Show Problem."

The report describes the control methods that have been adopted in the different industries. Among the more successful practices reported, has been the establishment of exhibitors' committees and boards. The survey indicated that another common method of dealing with the problem is by changing the interval between shows—"replacing two semi-annual shows with one annual show or the annual show with a show every two years." The opinion was expressed however, that there is no ideal schedule—"each industry, apparently, must work out the frequency question for itself."

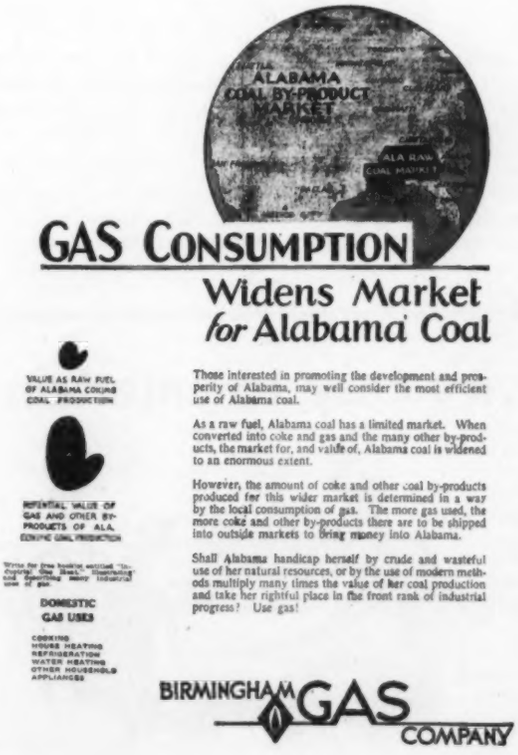
Other methods described in the report include reducing the number of regional shows in favor of national shows; making a combined exhibit of two or more previously independent shows; establishing a "limited eligibility" rule: and increasing the control of shows by the exhibitors themselves.

The information on which the study is based was obtained from 84 trade associations sponsoring national or regional trade shows. Included in this group were the associations responsible for most of the important national trade and industrial expositions.

Executives interested in the subject may obtain copies of *How Exhibitors Are Meeting the Trade Show Problem* by writing the Policyholders Service Bureau, Metropolitan Life Insurance Co., One Madison Avenue, New York City.

A New Twist

GAS merchandising in competition with coal has been given a new twist in a series of advertisements being published by the Birmingham Gas Company. The purpose of the ads is to show that it is much more economical to convert coal into coke and gas and that this step vastly enlarges the market for one of the chief products of the Birmingham district.


ALABAMA COAL BY-PRODUCT MARKET
ALA RAW COAL MARKET
GAS CONSUMPTION
Widens Market for Alabama Coal
VALUE AS RAW FUEL OF ALABAMA COKING COAL PRODUCTION
POTENTIAL VALUE OF GAS AND OTHER BY-PRODUCTS OF ALA. COKING COAL PRODUCTION
DOMESTIC GAS USES
COOKING
HOUSE HEATING
REFRIGERATION
WATER HEATING
OTHER HOUSEHOLD APPLIANCES
Those interested in promoting the development and prosperity of Alabama, may well consider the most efficient use of Alabama coal.
As a raw fuel, Alabama coal has a limited market. When converted into coke and gas and the many other by-products, the market for, and value of, Alabama coal is widened to an enormous extent.
However, the amount of coke and other coal by-products produced for this wider market is determined in a way by the local consumption of gas. The more gas used, the more coke and other by-products there are to be shipped into outside markets to bring money into Alabama.
Shall Alabama handicap herself by crude and wasteful use of her natural resources, or by the use of modern methods multiply many times the value of her coal production and take her rightful place in the front rank of industrial progress? Use gas!
BIRMINGHAM GAS COMPANY

"The wealth and prosperity of Alabama is measured by the efficient development of the state's natural resources," says one of the ads. "One of Alabama's greatest resources is coal. To burn raw coal is an enormous waste.

"The value of a ton of raw coal is multiplied many times when it is converted into coke, gas and other by-products. A wider market is reached by these by-products, bringing outside money into Alabama from the consumers.

"But this conversion operation is dependent to a great extent upon the local consumption of gas. The more gas used in the Birmingham District, the more can the other by-products of Alabama's coal, and the true wealth of the state, be utilized. Use gas."

More Sales from Fewer Articles in Display

Window Display by Waddell's House Furnishing Company, Houston, Texas

"MORE sales are made through window displays where there is no crowding . . . in fact, where there is only one or not more than three major appliances in a window display." says Mr. Critchfield, advertising manager for Waddell's House Furnishing Company, Houston, Texas.

This advertising manager reports that gas range sales for his firm have been better for 1931 than for similar periods. He advertises gas ranges—but he does more than advertise these appliances, he gets the most from his advertising. Critchfield frequently ties up the window displays with the national advertising that is done by the manufacturer. He places copies of such advertising in the windows to show prospects that the product is nationally advertised and backed by a company strong enough to go in for national advertising and national distribution.

But at no time is there crowding in the displays. This advertising man explains, "To try and move a department into a display window only detracts from all the merchandise and confuses the prospect. But by placing only one major article in the window or not more than three, special emphasis is placed on the merchandise and an actual desire is created from passing prospects. Our window displays are always simple and inexpensive, but after all, it is the selling force of a display that counts. Selling the prospect on one article at a time is sufficient to bring them into the store; then after a sale is completed, there is sufficient opportunity to show other articles that may be of interest."—*Chas. N. Tunnell.*

it's easy to entertain
in a gas-heated home
The first requisite of good entertaining is the comfort of your guests. Think of last winter's bridge parties—weren't the most pleasant affairs held in homes that were comfortably heated,—neither too hot nor too cold? Nothing so thoroughly ruins a party as an overheated or underheated house.
Homes heated with gas are always comfortable. The temperature is held automatically at just the desired degree. There is now work, no worry, no bother. The Janitrol, compact gas heating unit, can be installed in your present furnace for approximately $250. Payments are distributed over 24 months.
The Laclede Gas Light Company
Olive at Eleventh
CEntral 3800

Here's a gas advertisement that will get a lot of attention

Cooperation Pays!

CLOSE cooperation between the gas company and local retail dealers who feature gas appliances produces worth while results from a sales building standpoint. This is the experience of Mr. C. H. Savage, manager of the Kansas Pipe Line & Gas Company's office at Clay Center, Kansas.

"We didn't become established at Clay Center until January, 1930," remarked Mr. Savage. "It was necessary to sell the people of Clay Center on the advantages of gas as a safe, economical and desirable fuel. We have worked with this aim in view, and today we have 650 patrons in Clay Center, with other good prospects on our list.

"From the start, we appreciated the fact that the distribution of modern gas appliances was an important factor in boosting our business. We are not allowed to merchandise appliances, so we have adopted the policy of cooperating with the retail dealers who feature gas appliances at their stores here in Clay Center. There are seven firms interested in this line of business, and we offer practical assistance at every opportunity.

"As an example, our show room is at their disposal for displaying sample gas appliances, and local dealers keep an attractive stock on display here. Patrons notice these displays, become interested in the equipment, and frequently get in touch with the dealer who displayed the appliance, or appliances which interest them, to the advantage of all concerned. We supply local dealers with the names of new prospects. The patron who profits from the use of an assortment of modern gas appliances is the best booster for our company. We like to see local dealers boost their sales of gas appliances."

The Legal Side of Our Industry

Leo T. Parker discusses

- **Interpretation of Rate Ordinance**
- **Lost Suit**
- **City Purchase of Company Property**
- **Liability for Explosion Injury**
- **Legal Construction of Franchise**
- **Possession of Unpaid-for Appliances**
- **Waste of Gas Unlawful**
- **Injuries Caused by Fellow Workers**

Legal Interpretation of Maximum Rate Ordinance

VARIOUS Courts have held that an ordinance which enumerates the maximum rates which shall be charged by a gas company is not legally construed to mean that the company is obligated to charge *not less* than such rates.

For instance, in the late case of Community Natural Gas Co. V Natural Gas & Fuel Co., 34 S. W. (2d) 900, it was shown that two competitors, namely, the Natural Gas and Fuel Company and the Community Natural Gas Company have franchises in the same city to supply gas to the inhabitants. The Community Company had first received its franchise and shortly after the fuel company acquired its property it began extending its mains, paralleling those of the Community Company in the most remunerative domestic districts, and began soliciting the Community Company's patrons at its franchise rates which were lower than those of the Community Company.

During this period domestic patrons of the Community Company had dwindled to approximately 2,000. In the meantime the city passed an ordinance fixing the Community Company's maximum rates at $1.25 for the first M; 65 cents per M for the next 4 M; and 55 cents per M for all above 5 M.

The Fuel company for a short period reduced its rates from 50 cents to 40 cents per M, with a $1.50 minimum per month, but raise them again to the former scale. Soon afterward the Community Company advertised and put into effect a rate of 35 cents per M, with a $1.05 minimum monthly rate. The Fuel company thereupon brought suit to enjoin the Community Company from putting into effect its advertised rates on the contention that the latter company was not permitted, in view of the maximum ordinance, to charge for gas less than the maximum price specified by the ordinance.

However, it is important to know that the higher Court held the Community Company within its legal rights in charging the lower rate, and explained the law on the subject as follows:

"It will be observed that the rates authorized for the Community Company were only maxima, and those authorized by the fuel company, while not designated maxima, were lower than those of the Community Company for the same service to the same patrons in the same portions of the city . . . The city could not make rates for one corporation which were higher or lower than the rates made for another corporation for the same services to the same patrons in the same territory that would be legally binding as fixed rates. This the city does not appear to have attempted to do. All that it did, as we interpret the several franchise ordinances, was to fix maxima for each corporation, leaving them free to compete in the matter of rates within the maxima."

City Held Entitled to Purchase Gas Company Property

Ordinarily, a municipality may acquire gas company property under a valid contract providing the purchase is made strictly according to state and city laws.

For example, in Todd V Citizens' Gas Co., 46 F. (2d) 855, it was disclosed that a state law gave a city council power to license and regulate the supply, distribution and consumption of artificial and natural gas, to fix by contract or franchise the prices thereof, to regulate the laying of mains and pipes, and to designate the streets and alleys through which the same should be laid and maintained. Another section of the law provided that the city may purchase or lease the gas company property provided the council, before the approval of the contract or resolution therefor, should submit the question to the voters of the city.

The city council in 1887, pursuant to statutory authority, passed a general ordinance authorizing and regulating the use of the public streets for furnishing natural gas. It was provided in the ordinance that the city should have the right on six months' notice to purchase the plant of any corporation accepting its provisions at any time after the expiration of ten years from the date of its passage. The price to be paid was to be determined by appraisal, as provided in the ordinance.

Certain citizens filed suit against the city to prevent its purchase of the gas company on the grounds that the city was without power to acquire the gas property.

Notwithstanding this contention the higher Court held the city entitled, under the law, to acquire by purchase the gas company property, and said:

"While the powers of a municipal corporation are not to be enlarged by construction, they must be construed with reference to the object of their creation and so as to carry into effect every power clearly intended to be conferred. When a municipal corporation has the power to grant or refuse in its discretion permission to a public service company to occupy the streets with its structures, it may grant such permission subject to such conditions as it may see fit to impose, provided they are not against public policy or in derogation of any right which the company may have under its franchise from the state. The municipality, by means of such conditions, may impose obligations upon the company which it would have no power or authority to impose under its general charter powers, and, if the company accepts the grant, it is bound by the conditions, and is estopped to question their validity."

Gas Company Loses Suit

In Ohio Fuel Gas Co. V City of Mt. Vernon, 174 N. E. 260, it was shown that a city enacted a gas rate ordinance and offered to enter into a contract with the company granting it certain privileges and determining the rate for gas for a fixed period of time. Later a petition was circulated and signed by the required number of voters of the city. The ordinance was submitted to a referendum and rejected by the voters. Prior to this rejection the gas company instituted suit against the officers of the city to restrain holding of the referendum election, but suit was determined against the company a short time before the election. An appeal was taken by the gas company but this appeal was not presented until *after* the election and after the ordinance had been submitted to voters.

The gas company filed another suit contending that submission of the question to the electorate was null and void, and that the city wrongfully repudiated its contractual obligation with the company. However, the Court held the gas company not entitled to relief.

Liability of Gas Company for Injury Caused by Explosion

Various Courts have held that a gas company which sells gas to consumers is not an insurer, and that the bare fact of a gas explosion in a consumer's house does not warrant the application of the rule of certain liability against the company. Other Courts have held, however, that the application of this rule depends upon the facts and circumstances of each case. In other words, if an explosion occurs

closely following work by gas company employees on a gas line, in the immediate vicinity of the house, results in the company being bound to prove that its employees exercised care in the performance of the work.

For illustration, in the late case of Groff *v* Charleston-Dunbar Natural Gas Co., 156 S. E. 881, it was shown that a man named Groff purchased a house across the street from a gas pipe line of a gas company. The Groff house was in a new subdivision, the promoters of which had installed gas mains which were connected with the mains of the gas company. The gas mains in the subdivision remained the property of the owners but was used by the gas company to transmit gas directly to the Groff house. The soil on the hillside in the vicinity of the house was loose, unstable, and inclined to slip. A slip had occurred and piles had been driven along the foot of the hill even before the gas line was constructed.

One morning employees of the gas company repaired a leak in the main. They finished their work between noon and one P.M. when they applied the soapsuds test and found no leaks. The gas in the Groff house had been cut entirely off during the work. After the repairing was finished, the gas was turned on in the stove as a test. It burned strongly and was soon turned off. About eleven P.M. a cigarette lighter was ignited in the kitchen and a terrific explosion followed, demolishing the house and injuring the persons therein.

After the explosion the gas company employees made an investigation and found at the exact point of the connection of the subdivision pipe with the gas company's main pipe a crack on the lower side of the latter from an eighth to a fourth inch wide and about an inch in length had formed. There was a sewer line running from the house within a few inches of this crack, and the evidence shows that gas escaping there could have gotten into the house through or along this sewer or along the service pipe. No other break in the pipes was found.

The injured occupants of the house sued the gas company for damages. It was contended by the gas company that it is not liable unless it was under express contract to maintain the line running to the Groff property from its main, or that its workmen had actual knowledge of the break in the service pipe. Although the lower Court held the gas company liable, the higher Court reversed this decision, and stated the following important law:

"The fact that the owners had not sold or leased the line to defendant (gas company) is not significant in determining its duty. The test in such cases is *use*, not ownership. The defendant (gas company) had the exclusive use of the line for delivering gas to the Groff house. For the purpose of this delivery it made the line its own . . . What care was exercised by defendant to anticipate and prevent the slip? . . . Did it make reasonable inspection of the line? If so, would the slip or the tendency to slip with its consequent menace to the service pipe have been discovered? If the defendant (gas company) had notice of, or by the exercise of reasonable care it should have noticed, the instability of the hillside soil, it became its duty to support the 3-inch line properly against that danger . . . It has been held that 'every precaution which is within the bounds of reason' should be taken to guard against a misplacement of gas pipes . . . Other authorities have said 'every reasonable precaution suggested by experience and the known danger of the escape of gas ought to be taken.'"

Legal Construction of Franchise

In the late case of Kentucky Utilities Co. *v*. City of Paris, 3 S. W. (2nd) 873, it was disclosed that in March, 1913, the city of Paris, Kentucky, sold a gas franchise to a utility company under which gas is presently being supplied to the city and its inhabitants. In August, 1913, the utility company sold its Paris franchise to the Paris Gas and Electric Company, and on December 27, 1923, it was acquired by the Kentucky Utilities Company. The franchise expires by its terms in March, 1933.

A clause in the franchise is, as follows:

"It is agreed that the company at the commencement of business shall charge for natural gas 35 cents net, per thousand cubic feet . . . It is further provided that the minimum rate of 35 cents net shall be in force and remain in effect for the same length of time in Paris, that the said rate is effective in Lexington, Winchester and Mt. Sterling, or any of them, and when an increase in the rates is made at any time in those cities, a similar increase shall become effective and operative in Paris."

Prior to 1925, at which time the franchises in Lexington, Winchester and Mt. Sterling expired, the gas company serving those three cities sought in vain to negotiate new franchises. At the expiration of its franchises in those cities the gas company gave notice that the service would be discontinued. Litigation was thereby precipitated and during its pendency agreed orders were entered requiring the gas company to continue the service, and permitting it to charge a rate of 50 cents net per thousand cubic feet, but upon the condition that 10 cents of the charge should be impounded to abide the final fixing of a lawful rate. The arrangement thus made was carried out in all three cities, until a new franchise was granted the company by each of them. The new franchises, however, did not fix the gas rate, but left it to the State Railroad Commission to determine and prescribe a reasonable rate for the service. Pending a final determination of the rate, it was agreed by the terms of the franchise that the gas company should be authorized to charge 50 cents per thousand cubic feet for supplying gas with the facilities then possessed, but when certain additional facilities were provided, the gas company would be entitled to charge and collect 60 cents, provided 10 cents thereof would be impounded to abide the final result of the proceedings to establish a lawful rate. The additional facilities were furnished and the 60-cent rate has been charged and collected since.

The arrangement described applied to Lexington, Winchester and Mt. Sterling. Litigation developed over the question of whether or not the gas company was within its legal rights conferred by the above mentioned franchise clause in charging 50 cents or 60 cents per thousand cubic feet of gas sold in Paris, Kentucky.

In holding the gas company within its rights, the Court said:

"The city of Paris was not a party to the agreed orders, but it had granted a franchise by which it had agreed to permit its grantee (gas company) to charge a higher rate when an increase of rates was made in the cities mentioned in the contract . . . It is plain that the gas company was within the rights conferred by its franchise in conforming its charges in Paris to the conditions prevailing in Lexington, Winchester and Mt. Sterling. It is equally clear that it was entitled to charge the 50-cent rate after December 1, 1927."

When Seller May Possess Gas Stoves Not Paid for by Purchaser

Since almost all gas companies which furnish gas to consumers sell Gas appliances, the recent case of Knoxville Gas Co. *v* W. I. Kirby & Sons, 32 S. W. (2d) 1054, presents unusually interesting legal information.

First, it is important to know that modern Courts all agree that the most controlling test of the question whether property connected with real estate is to be deemed realty or a mere chattel, removable at the pleasure of the owner, is the *intention* of the parties.

In other words, the tendency of modern decisions is to make the rights of the parties to fixtures depend, not on the manner in which they are attached to the freehold, but upon the intention in erecting the improvements, and the uses to which they are put.

In the above case a gas company sold gas stoves to a construction company which constructed an apartment building. The stoves were attached each to a single gas or supply pipe, of the gas piping system, by means of a threaded "union" or "collar." The unrecorded contract of sale provided that the stoves were to remain the property of the gas company until paid for by the purchaser.

Soon afterward a person purchased the building and, although the gas stoves had not been paid for, the Court held that the gas company could not remove them from the building, saying:

"If the purchaser of an apartment house had to ascertain, at his peril, whether every electrical device, gas equipment, kitchen cabinet, and the like, were paid for, there would be imposed upon him an arduous, if not an impossible, task . . . In making sales upon the partial payment plan, it is just as easy to take a mortgage and have it recorded, and little additional expense is incurred thereby."

Therefore, it is quite apparent that a seller of gas appliances should record the contract of sale or a mortgage, otherwise a purchaser of property, or the lender of money on the property, may retain the equipment without liability.

Waste of Gas Unlawful

In a recently decided case, Bandini Co. V. Superior Court, 293 Pac. 899, the Court upheld the validity of a state law which provided against unreasonable waste of natural gas. This Court said:

"It is well known that the supply of gas is limited, and may be exhausted. The act is intended to protect the supply from waste. Under the act, it is conceded, a person, to exhaust the supply of his neighbor, cannot put down wells on his own land, and allow the gas to escape at the well . . . The Legislature may protect from waste the natural resources of the state, which are the common heritage of all. The right of the owner of property to do with it as he pleases is subject to the limitation that he must have due regard for the rights of others."

Also, in State V. Carson Co., 111 So. 162, the Supreme Court of Louisiana sustained a law by which the owners of gas wells were prohibited from taking and using for the manufacture of carbon black more than 20 per cent of the potential capacity of a gas well.

Rule of Injuries Caused by Fellow Employes

According to the settled law it is the duty of the master to exercise ordinary care to provide his servants with a reasonably safe place in which to work and reasonably safe appliance with which to work.

It is also well settled that in order to warrant a finding that negligence of an employer is the proximate cause of an injury, it must appear that the injury was the natural and probable consequence of the negligent or wrongful act and that it ought to have been foreseen in the light of the attending circumstances. Particularly is it true that a gas company is not liable for injuries to an employee caused by negligence of a fellow employee.

For instance, in Booth & Flinn Co. V. Pearsall, 33 S. W. (2d) 404, an employee sued a gas company for personal injuries alleged to have been sustained while working for the company and being struck in his eye by a sliver broken from an iron gas pipe by a block of wood which was thrown against it by a fellow servant.

During the trial testimony was introduced proving that the workman was employed to help raise the pipe to a level so that it could be welded at the joints. The pipe was leveled up by laying under it blocks of wood. The sliver struck him in the eye just as the laborer next to him threw a block down from his shoulder on the metal gas pipe.

It is interesting to observe that the higher Court held the gas company not liable for damages, saying:

"In cases like this, the burden of proof is upon the injured servant to show negligence on the part of the master or of a fellow servant in the failure to perform his duty to him as such fellow servant which proximately caused or resulted in his injury..... It cannot be said that even though the sliver which struck the plaintiff in the eye came from the iron pipe, when his fellow servant threw down the block of wood on it, the master or fellow servant was guilty of negligence. The work was being done in the ordinary and customary way of doing such work, and there is nothing to show that it was not reasonably safe."

Second Southwest Natural Gas Conference Held

The Second Southwest Natural Gas Sales Conference was held recently at the Arlington Hotel, Hot Springs, Ark., with an attendance of nearly 200 gas company managers and executives. Although the conference was sponsored by the American Gas Association, attendance was limited primarily to the Southwest.

Sterling A. Lipscombe, New Business Manager of the Little Rock Gas & Fuel Company, presided as chairman on the opening day. The welcoming address was given by R. W. Curran, President of the Arkansas Utilities Association, followed by a talk on "Advertising for Future Sales" delivered by Paul Renshaw of the Memphis Power & Light Company. E. J. Hatzenbuehler of the Lone Star Gas Company, Dallas, Texas, closed the morning with "Holding and Developing the Industrial Load."

Chester May, Community Natural Gas Company, Dallas, Texas, served as chairman for the afternoon meeting. He introduced as first speaker H. D. Ittner, Texas Public Service Company, Austin, who spoke on "Developing Dealer Cooperative Sales where Gas Company Merchandises." This talk was followed with "Promoting Sales Where Gas Company Does Not Merchandise," by Walter H. Lane, Oklahoma Natural Gas Corporation, Oklahoma City. Willard C. Weigel of the Lone Star Gas Company, Dallas, next spoke on "Advertising for Promoting Dealer Sales" and was followed by A. E. Higgins, Field Representative of the American Gas Association with a paper on "National Trends in Dealer Cooperation."

During the morning of the second day, Mr. Lipscombe again presided as chairman, introducing E. C. Whitcomb of the Lone Star Gas Company, Dallas, who delivered an address on "Central Plant House Heating in the Southwest District." The next subject chosen by P. C. Tucker, Arkansas Power & Light Company of Pine Bluff, was "Promoting Other Forms of House Heating." C. K. Patton, Texas Cities Gas Company, Dallas, closed the session with "Market Possibilities for House Cooling."

The afternoon of the final day was devoted almost entirely to the subject of gas refrigeration. W. Jennings Young of the Oklahoma Natural Gas Corporation, Tulsa, was chairman and introduced Mr. Lipscombe who had for his topic "Selecting, Training and Organizing the Sales Force." Next came several reports entitled "From the Firing Line" delivered by R. C. Rogers, Texas Cities Gas Company, El Paso, and C. C. Baker, Oklahoma Natural Gas Corporation, Tulsa. "Promoting Gas Refrigeration Sales" was the subject presented by C. B. Wilson, New Business Manager, Southern Cities Distributing Company, Shreveport, La. F. E. Sellman, Vice President of Electrolux Refrigerator Sales, Inc., closed with "The Southwest Market for Gas Refrigeration."

An exhibit of Electrolux sales promotion campaigns, direct mail literature, and sales plans was also presented to members attending the conference by G. H. Schlatter of the Sales Promotion Department. Over 80 delegates visited the room where this material was on display and found it a valuable means of formulating their gas refrigeration plans for the fall and winter season.

A Novel Clock

This novel electric clock, seven feet tall, was presented to Joseph E. Porter, president of the Kansas City Gas and Electric Company, by employees and friends on the company's fiftieth anniversary and the twenty-fifth anniversary of Mr. Porter's connection with it.

The clock, driven by a Telechron-motored movement, is an exact miniature reproduction of the company's new building. It is executed in wood carved and finished to match the stone construction of the building. The interior is equipped with a tube lighting system which illuminates the entire clock from the rotunda to the highest window in the tower.

Its dial is of engraved gold plate, Westminister chimes strike the hour and quarter hours on tubular bells.

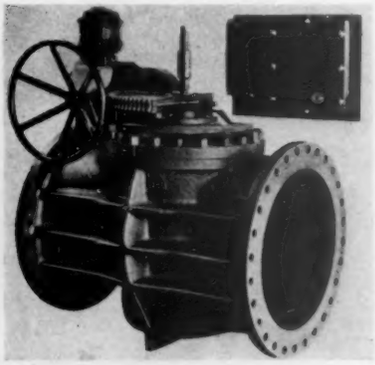
Seek Reduction in Utility Rates

The efforts of a large group of taxpayers at Marion Ind. to obtain a reduction in utility rates will be the subject of a hearing before the Indiana public service commission. Howell Ellis, a member of the commission will conduct the hearing. The petitioners ask reductions in telephone, electric light and power and gas rates. The city council recently named a committee to meet with representatives of the utility companies to see if a decrease were possible without action by the state. The utilities are said to have told the committee no reductions could be made at the present time.

EQUIPMENT NEWS

Electrically Controlled Valves

Electrically modernized and remote control equipment for use in the operation of large size valves has been developed by the manufacturers of Nordstrom Valves. These plug cock type lubricated valves up to 30 inches in size can be manually operated or by use of a low gear small motor. A remote control box has been developed for operation of the valve. The equipment of several different electrical manufacturers can be used, according to the manufacturers, Merco Nordstrom Valve Company.



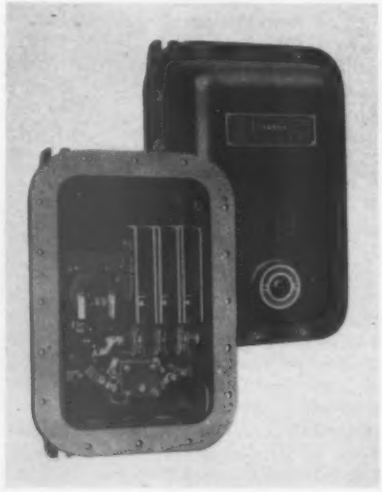
The illustration shows a Cutler-Hammer valve control system used in conjunction with a 30-inch "Venturi" Nordstrom Valve for use on a recently completed natural gas line.

This control system can be set in control houses or in the central operation office distant from the actual location of the valve, and by means of these controls the valves in the different lines can be manipulated. The quarter turn and lubricating features in Nordstrom valves make them particularly adaptable to remote control systems.

Engineers of the company also report the development of steam jacketed valves suitable for use in steam jacketed piping for handling fluids, for which all-iron valves are satisfactory.

New Explosion Proof A.C. Automatic Starter

Cutler-Hammer, Inc., Milwaukee, Wis., announce a new, explosion proof, across-the-line type, A.C. automatic starter, designed in accordance with the specifications of the Underwriters' Laboratories for class 1, group D hazardous locations. These specifications include applications where explosive gas or dust is prevalent in the atmosphere, such as dry cleaning and dyeing plants, gas plants, coke plants, oil fields, refineries, chemical plants, etc. This new starter is of the air break type—all contacts are made and broken in the air—there is no oil tank. The heavy cast-iron, explosion proof, enclosure is designed to prevent any explosion which might occur within it, from igniting the surrounding explosive atmosphere.



The construction of the starter proper consists of a standard 3 pole, magnetic contactor, with C-H thermal overload relays to protect the motor from burnout due to overloads.

The enclosing case is of the "split" type, which, when opened, allows easy access to all parts of the starter. Extra wide and accurately machined flanges are provided between the cover and case.

These starters are designed in three sizes to take care of motors up to 30 HP., 220 volts; and 50 HP., 440 and 550 volts.

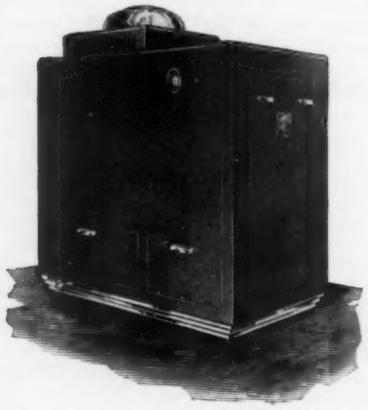
New Gas Fired Boiler Announced by National Radiator Corporation

A new gas boiler has been announced by E. P. Bailey, Jr., General Manager of the Gas Heating Division of the National Radiator Corporation, Johnstown, Pa.

The new gas boiler was designed after a careful preliminary study of the gas heating field, and a thorough analysis of the requirements of the present-day prospect. The chassis was developed by National Research Laboratories. Engineering and mechanical features have been worked out to a high degree of simplicity and effectiveness. Deep internal tube sections expose maximum heating surface to the flame, and provide large steam-liberating and steam storage space. For hot water heating or storage work, the element is equally effective. The unit operates at extremely high efficiency. Controls are simple and dependable, and operate on familiar principles.

The controls and chassis are completely insulated and encased in a cover of exceptional beauty, which was designed by Walter Dorwin Teague, an industrial designer of international repute. Emphasis has been placed on utility and durability, as well as upon appearance. The body is finished in French grey baked enamel. The base, dome and trim are chromium plated, resist the chemical action of floor cleaning materials, are non-marring, and may be easily cleaned with a cloth.

Mr. Bailey states that "The prime reason for the extreme care given the design is found in the growing vogue for basement rooms. If the boiler's appearance is such that it must be partitioned off, considerable expense is entailed and valuable space lost. By making the boiler so attractive that it is a veritable piece of furniture, all need of partitioning is eliminated. The boiler becomes an unobtrusive part of the furnishings, lends itself perfectly to the establishment of an attractive, comfortable, and homey room in the basement."



The Series 4 has recently been accorded A.G.A. approval, and is being manufactured and installed. A smaller series is now in the course of development, and will shortly be added to the line.

Detroit Stove Co. Put Out New Model

The Detroit-Michigan Stove Co., Detroit, Mich., have added a new gas range to their line, named "Table Top Range."

Grates are flush with the top. Pans and kettles can be slid off and on without lifting. Half of the top is a work table with room for four large pans and kettles. Colored porcelain burner cover converts whole top of range into an exceptionally large kitchen table. Oven and broiler full size for family cooking. Walls are insulated by means of air chambers. Doors insulated with therminsul and counter-balanced. Large utility drawer. Burner controls of polished bake-lite are so located that they never become hot. Other handles are pendant type. Grates are open type. Burners are Maltes Cross design with patented raised ports. All burners are especially designed for easy adjustment. Tapered oven burners giving uniform cooking heat at all points. The Table Top is finished in sparkling porcelain inside and

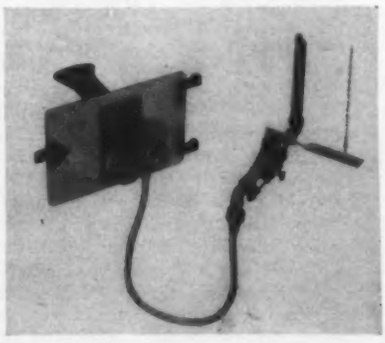
out and is furnished in one color combination—ivory and green in a marbelized effect. Legs are attached by means of speed nuts without removing the base strip. Optional equipment at extra cost, oven heat control, insulated ovens, push button top lighter, self-contained drawer type broiler.

Descriptive booklet will be mailed on request.

New Burner for Domestic Furnaces

The SC "Firedor" burner, for use in domestic furnaces during the Fall and Spring as a temporary source of heat, has just been announced by the Surface Combustion Corporation, Toledo, O.

The burner consists of a modified venturi adjustable mixer with an adjustable orifice, and a fish tail nozzle. The mixer slides through a front place casting mounted on the transite door, which replaces the original fire door. The mixer is held in place by means of a set screw.



Below the mixer is a secondary air control equipped with a set screw for adjusting it for the proper opening. A flexible armored hose connects the burner to a throttling valve which is operated with a chain and lever. The chain extends upstairs and terminates in a wall control box. Sufficient gas is by-passed around the throttling valve to keep the burner ignited when the throttling valve is closed.

This equipment will be distributed through Gas Companies and fills a need for reliable temporary burner for domestic installation.

A New Gas Appliance

The Johnson Gas Appliance Company of Cedar Rapids, Iowa, has developed a new gas appliance—the Johnson Range Burner—for applying gas to kitchen ranges now fueled with coal or oil.

The popularity of old type fuel ranges is still tremendous. They are entrenched with the sureness of a tradition. "Why is a coal range used in the city?" The user invariably answers, "Because it heats the kitchen." Careful analysis would show additional strong factors including habit and tradition. Coal ranges certainly are not used because of any desire to carry fuel or remove ashes. With suitable rates, gas immediately becomes the most desirable fuel.

For such an application the Johnson Gas Appliance Company has created the Range Burner which has been carefully designed for this particular use. The Range Burner is the first in the field for this purpose. It may be quickly and easily installed in any coal range—entirely supplanting solid fuels for both cooking and heating. It is equipped with a safety pilot light which prevents the flow of unburned gas. Thermostatic control is optional.

A booklet describing the new burner will be mailed on request.

Welding Fittings Bulletin

The Midwest Piping & Supply Co., St. Louis, Mo., recently issued a four page bulletin describing their line of "Midwest" welding ells—90 degrees and 45 degrees.

These fittings are to exact radius and sectional diameter and in perfect round—the result of a special compression sizing operation. Unique fixtures used in machining the bevel on the ends assure an included angle of exactly 90° or 45°. Inspection is rigid and every Ell is subjected to a hydrostatic test pressure 25% greater than the mill test of the corresponding pipe.

Midwest Welding Ells have tangents—tangents that are an important feature because they reduce the time and cost of installation. They make it possible to more quickly and accurately line up the pipe and fitting. The welds are more accessible and are removed from the point of maximum bending stress. One-quarter inch of tangent is provided for each inch of pipe diameter; thus an 8-inch Ell has tangents 2 inches long.

The bulletin also contains several tables and sectional drawings. A copy will be mailed on request.

Saturation Recorder-Controller

To maintain a constant relative humidity regardless of variations in the gas temperature, the TAG Saturation Recorder-Controller was developed for gas and rehydration work. In this controller the differential temperature between wet-and dry-bulbs operate the diaphragm valve.

The controller is operated by high pressure gas maintained at the uniform 15 lbs. required by a reducing valve. The very small bleed from the pilot valve in the controller case is removed by a ⅛" opening in the side wall of the gas-tight case. A ⅛" pipe carries it outdoors or to some safe spilling point or it may be piped into the low pressure gas system. The controller case is gas-tight and is of pressed steel construction which is given a crystallized black finish.

The chart employed has a scale reading from zero (at the center) to 110° F. over which a pen records the dry-bulb or gas temperature. A second scale reading from 0 to 20° F. depression occupies the outside rim of the chart and a second pen here records the depression of wet bulb below dry bulb temperature. Since the two pens never cross each other they are of the same length and record on corresponding radial or time arcs of the charts, thus synchronizing both records for comparison.

The controller utilizes a very simple mechanism to obtain the requisite action. The two mercury Bourdon Springs from the wet- and dry-bulb systems are mounted one above the other and are connected by links A and B (shown in Fig. 1), to a "walking-beam" C. The

fulcrum D of the "walking-beam" operated the long lever E which is fulcrumed at F and whose other end operates the flapper G through link H. Note that if both mercury Bourdon Springs expand equally there is no action because link A pushes down and link B pulls up merely moving "walking-beam" C on its fulcrum D BUT NOT MOVING FULCRUM D. When, however, the one mercury spring expands more or less than the other, fulcrum D is moved up or down, thus moving lever E, link H, and flapper G, thereby operating the diaphragm valve.

The operation of the flapper G opens, closes or throttles a small orifice or bleed. When this flapper valve is open the gas bleeds out from the orifice deflating capsular spring air relay M. When flapper valve is fully closed air relay M is inflated and of course partial closing of the flapper valve causes partial expansion of M. Air relay M operates the pilot ball valve N which regulates the gas pressure on the diaphragm top of the steam valve whose operation is obvious. By means of the "double relay" arrangement only a very small amount of power is needed and consequently the pen arm is not restricted in its movement. Thus, very sensitive and accurate control is obtained. This action is standard on Recorder-Controllers of which thousands are in daily use throughout all industry.

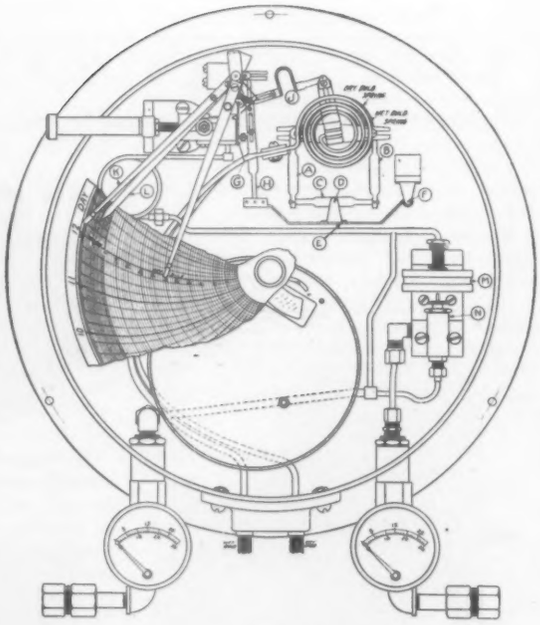


Figure 1

The method of operating this differential temperature of depression control eliminates any connecting tubing error as it is (inherently) fully compensating. The usual bimetallic head compensator is interposed in line J connecting the dry-bulb mercury spring with the dry-bulb pen, but this compensator in no way affects the depression pen mechanism.

Additional information may be obtained from C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.

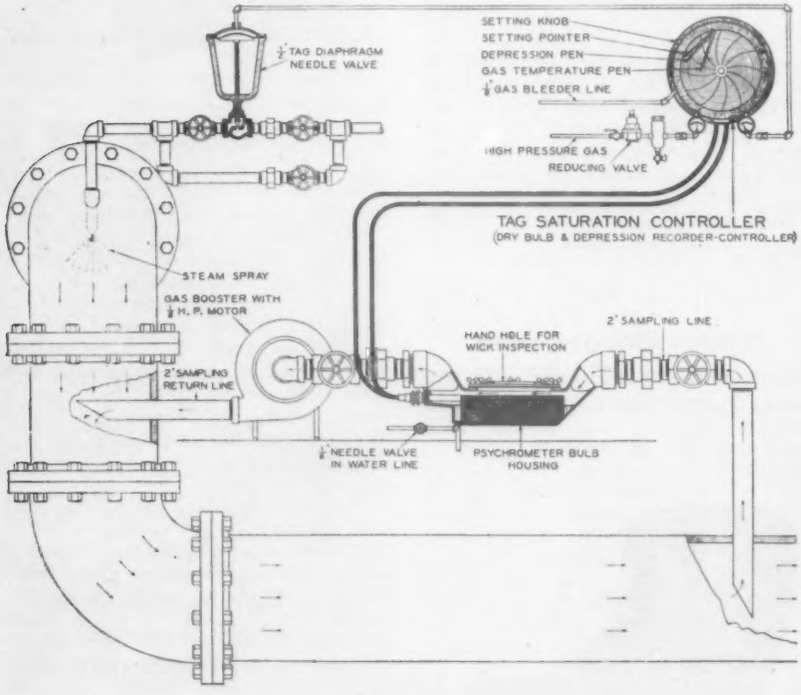


Figure 2

Manufactured Gas Revenues For 1931

Revenues of the manufactured gas industry in 1931 aggregated some $441,900,000, according to preliminary estimates of the American Gas Association Statistical Department. This represented a decrease of 2.5 per cent from the 1930 figure.

While total sales of manufactured gas to consumers also registered a decline of about 2.5 per cent, an outstanding exception to the general trend was the marked increase shown in the use of gas for househeating purposes. In 1930 sales of manufactured gas for househeating purposes were 18,600,000,000 cubic feet, but during 1931 this figure rose to 22,200,000,000 cubic feet, an increase of nearly 20 per cent in this class of business.

Owing to activity in the construction of new pipe lines and the extension of distribution systems for natural gas which characterized most of 1931, the decline in natural gas sales for domestic and commercial purposes was relatively small, amounting to less than 2 per cent. In keeping with general economic conditions however, natural gas sales for industrial purposes registered a decline of about 15 per cent. In addition to this decline in ordinary industrial sales, the amount of natural gas used in the manufacture of carbon black and consumed in oil and gas field operations apparently declined some 28 per cent, with the result that the entire consumption of natural gas for all purposes during 1931 is expected to run about 20 per cent under the corresponding figure for 1930.

Cities Service Company Earnings Show Gain for Fifth Successive Month

For the fifth consecutive month net earnings and net to stock and reserves of Cities Service Company has shown a substantial increase over the preceding month, it was shown by the company's monthly statement of earnings released recently by Henry L. Doherty & Company.

Starting with June as a low point, each succeeding month has developed increased earnings, with net to common stock and reserves for October showing a 31% increase over September. In November, net to common stock and reserves amounted to $1,514,000, an increase of 60% over October.

The low point in company earnings for the year occurred in June and was due largely to the collapse in the petroleum price structure.

The number of holders of Cities Service Common stock has increased steadily throughout the year. The total on December 1st was 510,107, an increase of 71,232 since January 15, 1931.

Regular monthly dividends on Preferred, Preference BB, Preference B and Common stocks were declared, all payable February 1 to stockholders of record January 15, 1932.

NEWS *of the* GAS INDUSTRY

Large Expansion Program

A $20,000,000 expansion program enabled the United Gas System to provide 52 additional towns and cities in Texas and Louisiana with modern natural gas service during the year of 1931.

The expansion program which gave natural gas service to an average of one new locality each week during the year also included several projects which were calculated to provide the old customers of the organization a more convenient gas service.

While the major portion of the expansion work was centered in Texas and Louisiana, the year also marked entry of a United Gas System unit, the United Gas Public Service Company, into the State of Mississippi with headquarters at Jackson where large natural gas production was discovered.

During 1931 the United Gas System also took over full operation of its line which extends from Jackson, Miss., eastward to Pensacola, Fla.

The New Year found the United Gas System's limite bounded by a line drawn from Pensacola along the Gulf Coast to Monterrey, Mexico, thence northward through Laredo and San Antonio to Clarendon, Texas, in the Wichita Falls and Amarillo area, continuing eastward through Dallas and Fort Worth to Shreveport and Monroe, to Jackson, thence back to Pensacola.

Approve New Gas Rates

The New York Public Service Commission has approved new gas rates to be charged by the Republic Light, Heat & Power Company in Kenmore, Erie County. The rate is in accordance with the franchise granted by the Village of Kenmore which stipulated that the company should not charge rates which would yield an average return of more than 8 per cent on the value of its property used in furnishing gas in Kenmore and further, that the rates should not be higher than the rates charged in Buffalo. The company states that it does not believe this rate to be best for the customers or for the company, but that it is ready to give it a trial and make it as successful as possible.

Granted Operating Franchise

The Mobile Gas Company has been granted a new 30-year operating franchise by the board of city commissioners. An amendment inserted at the suggestion of the city, provides specifically that the franchise shall not be construed as exclusive. Another amendment provides that the present annual business license of $2,500 assessed against the utility is not to be increased except in the event that other business licenses in Mobile should be raised proportionately.

The gas company did not protest either of the amendments inserted in the ordinance, but was unwilling for no limitation to be fixed on the business license, citing in support of its contention on that point the annual franchise tax to be paid under the ordinance.

The ordinance provides that the franchise tax shall begin at $8,500 and gradually increase yearly until it reaches $12,000 at the end of five years, after which a basis of two per cent of the company's gross income is to govern.

To Construct Gas Distribution System

The Commission has approved the application of the New York Central Electric Corporation for permission to construct a gas distribution system in the village of Cohocton and the town of Cameron, Steuben County, and to exercise franchises granted by the village and town. The source of supply for Cohocton will be the new Iroquois Gas Corporation's transmission line now being constructed in the Wayne gas field from the village of Wayne through Hammondsport, Cohocton and Wayland to Dansville. This line passes the edge of the village and the New York Central Corporation plans to purchase gas from the Iroquois Gas Corporation under a contract which it has now for the gas it distributes in Dansville. Four miles of line will be constructed at a cost of about $33,000.

Declare Dividend

Quarterly dividend at the rate of $1.50 per annum to shareholders of record December 31st, and payable January 30th, was declared by the Directors of Montreal Light Heat & Power Consolidated at their regular monthly meeting. The current dividend is the hundred and twenty-third consecutive payment to shareholders since the incorporation of the original Montreal Light Heat & Power Company in 1901.

Another Natural Gas Line

The Continental Construction Company will order 170 miles, 11,800 tons of pipe, for building a natural gas line between Geneseo, Illinois and Milwaukee.

Convention Calendar

January

25- (Entire week) 38 Annual Meeting of the American Society of Heating and Ventilating Engineers, Hotel Statler; 27th Annual Meeting of the American Society of Refrigerating Engineers, Hotel Cleveland, and the Second International Heating and Ventilating Exposition, Cleveland Auditorium, Cleveland, Ohio.

February

3-4 New England Gas Association convention, Hotel Statler, Boston, Mass.

18- Manufacturers' Section, American Gas Association, Palmer House, Chicago, Ill.

April

8- Maryland Utilities Association, annual convention, Lord Baltimore Hotel, Baltimore, Md. D. E. Kinnear, secretary.

28-30 Missouri Association of Public Utilities, Excelsior Springs, Mo. F. D. Beardslee, secretary.

June

9-10 Canadian Gas Association, Winnipeg, Manitoba, Fort Gary Hotel. G. W. Allen, Secretary.

July

5-7 Michigan Gas Association, annual convention, Mackinac Island, Mich. Albert G. Schroeder, secretary-treasurer.

October

10-14 American Gas Association, Atlantic City, N. J.

Get Gas Permit

The Arkansas Valley Natural Gas Company, which will purchase natural gas from the Amarillo-Denver pipe line of the Colorado Interstate Gas Company, has been given permission by the public utilities commission to serve Fowler, Colorado, with natural gas. It already serves Fort Lyon, Fountain Valley School, Las Animas, Manzanola, Ordway and Sugar City with the gas.

Qualified to Do Business in Indiana

Officials of the Indiana Gas Transmission Corporation, a Delaware corporation, have filed papers with the secretary of state in Indianapolis qualifying the company to do business in Indiana. The corporation transmits natural and artificial gas. No resident Indiana agent was announced at the time of qualification.

Fifty-Six Years of Continuous Service

George S. Carlyle, Supervisor of the Mailing Department of the Consolidated Gas Electric Light and Power Company of Baltimore was retired on January 1st after fifty-six years of continuous service.

On December 21st Mr. Carlyle, who holds the longest service record of any of the Company's employees, was presented with his service retirement certificate by President Herbert A. Wagner of the Company. The ceremony took place in the President's Office.

Mr. Carlyle is being retired at the age of 65. He began work with the Gas Light Company of Baltimore at 19 South Street in 1876 when he was 9½ years old. In the first two years he had a part-time job working after school and on Saturdays. In February, 1878, when 11 years old, he began his full time occupation as an office boy and messenger.

In 1926 when Mr. Carlyle completed 50 years of active service, the Company presented him with a purse of $500. Today he is the only active man in the Company's service who wears a diamond studded service badge.

Mr. Carlyle's service with the Gas Light Company of Baltimore began before the first electric company in Baltimore was organized. His work has always been in the clerical end of the Company and he has witnessed the advent of a host of office appliances, typewriters, adding machines, etc., and the general use of the telephone.

Since 1921 Mr. Carlyle has been the Supervisor of the Company's Mailing Department. For 22 years prior to that time he was a day clerk in the Mailing Department.

In presenting the service retirement certificate, President Wagner said:

"The occasion of presenting you with this Service Certificate which carries with it a pension for the rest of your life is an outstanding one not only for you but for the Company. You have served the Company faithfully and efficiently for 56 years and you are still strong and in good health.

"It is a fine and an unusual thing for a man to remain with one concern for 56 years and an accomplishment that few men can equal. You have made a record which you may be proud of. We are proud of you, for it speaks well of this Company that it can retain a good man for 56 years without any desire on his part to look for a job elsewhere as he grows in knowledge and ability. The Company family ties have been strong for you and happy ones too, I am sure.

"I congratulate you with all my heart and wish to assure you that while you are leaving your work with us you will still be one of us and on the payroll.

"We hope to see you often."

To which Mr. Carlyle replied:

"Mr. President, Vice President, Secretary and members of the Provident Committee, I want to thank you for the generous pension awarded me. I feel quite confident that it is adequate to meet my needs at the present time and relieves my mind of the thought of looking for employment elsewhere. I hope I shall prove worthy of your generosity. I thank you."

President Herbert A. Wagner of the Consolidated Gas Electric Light and Power Company of Baltimore presenting the Service Retirement Certificate to Mr. George S. Carlyle.

Gas Utility Revenues Aggregate $537,306,395 in First Ten Months

Revenues of utility concerns engaged in the distribution of manufactured and natural gas aggregated $537,306,395 during the first ten months of 1931, according to reports from companies serving some 13,656,740 customers and comprising approximately 90 per cent of the utility distribution of manufactured and natural gas, it was announced recently by Paul Ryan, Chief Statistician of the American Gas Association.

The manufactured gas companies reported revenues of $314,191,940 for the ten month period, representing a decrease of 2.3 per cent from the $321,654,799 reported by these same concerns for the corresponding period of 1930. The revenues of the natural gas utilities reporting for the ten month period totaled $223,114,455, a drop of 6.9 per cent from the same interval of 1930.

For the ten months ending with October sales of the manufactured gas companies aggregated 292,992,851,000 cubic feet, representing a decline of 2.3 per cent from 1930.

Sales of natural gas reported for the same ten month interval totaled 549,985,192,000 cubic feet, as compared with 605,192,164,000 cubic feet during the initial ten months of 1930, a loss of 9 per cent.

In New England manufactured gas sales for the ten month period were up 1.2 per cent, the result in large part of a gain of some 20 per cent in sales of gas for househeating purposes during the period. In the Middle Atlantic states, comprising New Jersey, New York, and Pennsylvania, sales for the first ten months of 1931 totaled 120,721,966,000 cubic feet, or substantially the same figure reported for the corresponding period of the preceding year. In the East North Central states, embracing Illinois, Indiana, Michigan, Ohio and Wisconsin, manufactured gas sales were down 7 percent for the ten month period, the result in large part of a drop of 15 per cent in sales of gas for industrial-commercial uses.

File Petition for Reduction in Rates

Petitions for a reduction in all utility rates charged by the various companies in Muncie, have been filed with the Indiana public service commission by representatives of the city council there and its utility committee. The petitions ask for a reduction in gas, telephone, light and water rates. The city is served by the Indiana General Service Company for electric current, the Central Indiana Gas Company for gas and the Indiana Tel. & Telephone Company.

Offer Contract Gas Rate to Residential Customers

The Empire Southern Gas Company, Brady, Texas, recently put into effect a new contract gas rate to year-round customers. The new rate is optional and applies only to residences and not to commercial enterprises. The following are the rates:

Flat rate of 30c per room, per month, with no residence being billed on less than four nor more than eight rooms and a meter rate of

First 10 hundred cubic feet, per room per month, at 6c per hundred cubic feet;

Next 10 hundred cubic feet, per room per month, at 6c per hundred cubic feet;

Excess at the rate of 2c per hundred cubic feet, per room per month.

Flat rate minimum not less than $1.20 net.

The rates cover all gas used for lighting, cooking, heating and other domestic uses.

Laying Natural Gas Pipeline to Kaolin Mines

The Southern Natural Gas Corporation is busy laying a natural gas pipeline to the kaolin mines in Gordon, Georgia. Already a number of plants which have been burning coal for fuel have contracted to utilize natural gas instead when it arrives, and the change is expected to revolutionize the kaolin industry there. Gordon Clays, Inc., for example, will burn about 56,600,000 cubic feet of natural gas a year in its plant. The Superior Kaolin Company, of Dry Branch, Ga., has also contracted to utilize natural gas, and will burn about 36,000,000 cubic feet annually.

Natural Gas Used in Municipal Plant

Mississippi gas from the Jackson field is now being used in the Canton, Miss., municipal light and water plant under one of its large steam boilers.

The gas purchased through the United Gas Public Utilities Company, was turned on by Mayor O. N. Harris and E. A. Howell, who for twenty-five years has been a member of the water and light commission.

Authority Granted to Construct Gas Plant

The New York Public Service Commission has granted the petition of the New York Central Electric Corporation for permission to construct a gas plant in the town of Sparta, Livingston County, and to exercise franchise granted by the town board on condition that the construction work should be completed and the company prepared to supply gas within one year. The company will get its gas from a transmission line to be constructed by the Iroquois Gas Company and will charge the same rates as in Dansville.

Gets Natural Gas Permit

Craig, Colorado has given the Ohio Oil Company a franchise to serve it with natural gas. The Ohio will drill the Craig structure for the gas supply. There are many oil and gas wells in that vicinity.

New Gas Rate

Two federal judges, sitting in Augusta as an appellate tribunal, have recently ordered a new gas rate for the City of Augusta, thus settling a controversy that has been under way for several years.

The new rates ordered by the judges, following an amicable settlement between the City of Augusta and the Georgia Public Utilities Company, supplying gas for the city, are: A service charge of 85 cents per month, plus a rate of $1.45 per thousand for the first 2,000 cubic feet, $1.20 per thousand for the next 3,000 cubic feet, and $1.00 per thousand for all gas used over 5,000 cubic feet.

The present rate in Augusta is $1.85 per thousand up to 10,000 cubic feet without a service charge. The new rates must be approved by the state public service commission, it is stated.

Airport to Use Natural Gas

Natural gas is to be installed for all purposes at Maxwell Field, the municipal air-port of Montgomery, Ala. Approximately 60,000,000 cubic feet of gas a year will be used, the installation being one of the largest in the Montgomery section of Alabama.

Contemplate Extension of Gas System

Extension of the San Diego Consolidated Gas and Electric Company gas system to the Mexican border is planned with a proposed line to Otay and San Ysidero, five miles south of Chula Vista, the present southern terminus of the company's lines. About $50,000 is involved in the contemplated construction.

Eleven Towns Added

Eleven towns in Nebraska and Iowa were connected with Northern Natural Gas System during November. They are: In Nebraska, Pender, Wakefield, Wayne, Valley, Elkhorn and Waterloo; In Iowa, Dayton, Avoca, Harcourt, Gowrie and Farnhamville.

Standard Gas & Electric Announces Preliminary Construction Budget

Standard Gas and Electric Company's preliminary construction budget for 1932 will total $25,015,966, according to John J. O'Brien, president of the company. Projects now under construction at properties in the Standard Gas and Electric Company system amounting to $3,508,034 were not completed during 1931, costs for which are included in the preliminary budget figure set up for 1932. Unfinished construction during 1931 includes the Prospect diversion project of The California Oregon Power Company system which will not be placed in service until 1932.

The total preliminary budget expenditure for 1932 may be segregated as follows: electric department, $16,347,300; gas department, $3,319,809, and other departments, including general construction, $5,338,857.

Engineering and construction services for these projects will be rendered by Byllesby Engineering and Management Corporation, the wholly owned subsidiary of Standard Gas and Electric Company.

The total installed steam and electric generating capacity in the Standard Gas system is now 1,539,477 kilowatts. The Standard Gas and Electric Company system now serves 1,658 communities having a combined population of 6,000,000 located in 20 states.

Change in Ownership

The Central Indiana Gas Company, with headquarters in Muncie, Ind., has purchased the gas distributing company at Middletown, Ind. It was learned that the Middletown holdings were sold last April to Indianapolis capital which in turn sold the holdings to the Central Indiana company. Raymond Hess will remain in charge at Middletown.

Kuhn Brothers of Hugoton, Kansas, drilled in a 20 million cubic foot gas well near Satanta, Kansas, for the Derby Oil Company of Wichita. Engineers in the field say that this extends the already large gas field of Hugoton ten miles, and that there is a market for all the gas that can be produced in that locality.

Expanding Properties

Coast Counties Gas and Electric Company, Santa Cruz, Cal., is expanding its properties in Contra Costa County to include natural gas service to the city of Danville and the Mt. Diablo Country Club district, a total of about 150 customers.

Contracts For Natural Gas

The Pacific Gas & Electric Company signed a contract with the Spreckels Sugar Company to deliver it a maximum of sixteen million cubic feet of gas daily at its Salinas, California, beet sugar plant.

Taking Gas From Kansas Field

The Republic Gas Corporation is delivering to the Northern Natural Gas Company, natural gas from its reserves in the Hugoton field of Kansas. This gas is turned into the 800 mile pipe line serving cities in eastern Nebraska and central Iowa and the pipe line will eventually be extended into Minnesota.

Indiana Public Service Commission Refuses to Permit "Therm" Billing

The Indiana public service commission has refused to modify its order of a few weeks ago ordering gas utilities to abandon the use of the "therm" method of billing customers. Petitions for modification had been filed by the Public Service Company of Indiana and the Northern Indiana Public Service Company. The utilities sought to maintain the therm method of billing for one large customer in Newcastle and to permit its use in Hammond, Valparaiso and Michigan City districts and for South Bend industrial patrons. John W. McCardle, president of the commission, said he was opposed to the order because the patrons of Hammond, where it was proposed to start, would have received reductions in bills amounting to $117,000 annually. However, the company would have to remodel its plant, which cost, he said, would be assessed to the consumers.

A Splendid Natural Gas Well

The Colorado Gas & Utilities Company of Denver who have a pipe line from the Hugoton gas field, Stevens county, Kansas to Springfield and Lamar, Colorado, serving many towns, brought in another well in that field which is making 18 million cubic feet of gas, from a depth of 2,623 feet. A. J. Hardendorf is president and L. L. Stone is secretary of the company.

Voted New Franchise

The Oklahoma Natural Gas Corporation was voted a gas franchise renewal for twenty-five years by citizens of Luther in an election held recently. The Company will operate under the new franchise from the present time, although the former franchise did not expire until 1933.

Saving Natural Gas

While the waste of natural gas in California was fully 40 per cent, a year ago, Claude C. Brown, gas expert for the state railroad commission, advises that this waste has been cut down to less than 8 per cent and this is about the maximum efficiency. However, if it can be lowered more, that will be done.

Weld Test Demonstrations Feature International Acetylene Association Convention

Greatly increased interest in the continued development of oxy-acetylene welding and cutting was evidenced by the record-breaking attendance at the Thirty-Second Annual Convention of the International Acetylene Association recently held at the Congress Hotel, Chicago. Over fourteen hundred engineers, architects and representatives from industrial plants, factories and technical schools attended the various sessions of the convention. Important technical sessions were devoted to: "Transportation—Air, Rail and Motor Vehicle"; "Welded Piping—Production, Building and Overland Piping"; "Welding in the Chemical Industry"; and "Welding Education."

An outstanding feature of the convention was the program on "Welds, Weld Tests and The Welder." This meeting, with an attendance of over 1200, was the largest ever held in the welding industry. Dr. S. Lewis Land, Educational Director, Heating and Piping Contractors National Association, spoke on "Opportunities for Welding-trained Men in the Metal Working Trades and Industries" and T. M. Jones, Superintendent of Welding, Illinois Steel Company, South Chicago, Illinois, discussed "The Training of Welders." These papers were followed by actual demonstrations and explanations of the more important methods available for testing welds. This phase of the program was introduced by Professor H. L. Whittemore, of the Bureau of Standards, Washington, D. C., who spoke briefly on the growing importance of tests and what they mean to welders and the welding industry.

Test demonstrations were made by J. J. Crowe, Air Reduction Laboratories, Inc., New York, and Dr. A. B. Kinzel and W. B. Miller, Engineers, Union Carbide and Carbon Research Laboratories, Inc., New York.

The 1930 Morehead Medal was awarded to A. Cressy Morrison, whose services as Secretary-Treasurer of the International Acetylene Association for the past 25 years have been of incalculable value to the industry.

The following officers were unanimously elected for 1932: President, W. C. Keeley, Jr., Vice-President, National Carbide Corporation; Vice-President, E. J. Hayden, The Linde Air Products Company, Chicago; Secretary, H. F. Reinhard, Chief Engineer, J. B. Colt Company, New York; and Treasurer, W. C. Cotter, The Oxweld Railroad Service Company, New York.

The following directors were elected to serve for three years: G. B. Walker, Vice-President, The Linde Air Products Company, New York; L. F. Loutrel, Shawinigan Products Corporation, New York; and W. D. Flannery, Harris Calorific Company, New York.

Answer to Starbuck Rebus:—
"Go after business and you will secure it."

Personals

Samuel Insull, Jr., at a recent meeting of the board of directors of the Midland United Company resigned as president and was elected vice-chairman of the company.

Robert M. Feustel who has been executive vice president of the company, was elected president. William A. Sauer who has been vice president and general manager, was elected executive vice president.

The same changes in officers were made in the Midland Utilities Company at a meeting of its board of directors also held yesterday afternoon.

Mr. Feustel was elected a director of the Midland United Company, succeeding Frank E. Kruesi. He was already a member of the board of Midland Utilities Company.

Mr. Feustel is an officer of operating companies in the Midland United Company group and for the last three years has been the chief operating head of the subsidiaries as well as executive vice president of the Midland United Company.

Harvey W. Edmund has recently joined the staff of Standard Management and Operating Corporation as assistant to Vice President H. L. Farrar, with headquarters in San Francisco.

Mr. Edmund will be remembered by the gas and electric fraternity as Commercial Manager of the Western United Gas and Electric Company and more recently as President of the Universal Heater Manufacturing Company. He will divide his efforts between merchandising and operating activities of the companies operated by Standard Management and Operating Corporation, including Coast Counties Gas and Electric Company, Westside Natural Gas Company, Natural Gas Corporation of California, Natural Gas Corporation of Oregon, Natural Gas Corporation of Washington and Coast Industrial Gas Company.

Conrad N. Lauer, a vice-president of The United Gas Improvement Company and president of The Philadelphia Gas Works Company, was elected president of the American Society of Mechanical Engineers.

W. H. Gartley, vice-president of the Philadelphia Gas Works Company retired as of December 31st. Mr. Gartley was associated with the U.G.I. System since 1889.

Fred Morgan Kirby, Wilkes-Barre, Pa., was recently elected a member of the Board of Directors of The United Gas Improvement Company to fill the vacancy caused by the death of Charles Day.

Capt. William McGregor, Vice President of the Pawtucket Gas Company, Pawtucket, R. I., was recently made a Chevalier of the Legion of Honor of France. Capt. McGregor has been connected with the utilities in New England for a period of almost 50 years, and is one of the two honorary members of the Guild of New England Gas Managers.

A. F. Staniford, Vice-President of The Brooklyn Union Gas Company recently completed his fiftieth year of association with that company. Mr. Staniford entered the employ of the old Metropolitan Gas Light Company, in 1881. Mr. Staniford has held the position of Vice-President with the Brooklyn Union Gas Co. for more than 21 years. He is also a Director of the company.

Wiley F. Corl has been appointed vice-president in charge of public utility subsidiaries, of the International Utilities Corp., New York. Mr. Corl was formerly associated with the United Gas Improvement Co.

D. U. Wheaton, has been transferred to the Los Angeles office of the Southern California Gas Company, where he will take charge of dealer contact activities. Mr. Wheaton was formerly sales supervisor of the Northern Division at Glendale, California.

Paul C. Hargrave succeeds Mr. D. U. Wheaton as sales supervisor of the Northern Division of the Southern California Gas Company at Glendale.

Ray R. Roberts, Gas Superintendent of the Wisconsin Power & Light Co. at Janesville, recently received a diamond service pin in recognition of 25 years of continuous service with the company.

O. M. Butler has been appointed Sales Supervisor of the Southern Division of the Southern California Gas Co., Redondo, California.

George Biddison succeeds H. D. Shelson as gas engineer of the Northwestern Natural Gas Co., Grandview, Wash. Mr. Biddison was formerly with the Wichison Gas & Pipe Line Co., Wichison, Kansas.

Wm. J. Buie has been placed in charge of the Stamford & Western Gas Co., at Stamford, Texas.

W. R. Rogers has been appointed local manager of the Northern Natural Gas Company at Valley, Nebraska.

George C. McLaughlin, formerly superintendent of the Michigan City district of the Northern Indiana Public Service Company, was appointed superintendent of the Hammond division of the company.

E. D. Anderson has been appointed manager of the Goshen, Indiana, Division of the Interstate Public Service Company. He was formerly manager of the Hammond division.

John J. Clavin has been appointed sales manager of the New York and Queens Gas Company, Flushing, N. Y.

C. W. Harrington has been appointed Industrial Gas Engineer of the Missouri Power and Light Company in Jefferson City and other natural gas towns in Missouri.

Carl D. Rees succeeds George G. McLaughlin as superintendent of the Michigan City district of the Northern Indiana Public Service Company.

C. E. Lasher has been appointed division manager of the Washington Gas & Electric Company, with headquarters in Longview, Wash. He was formerly local manager of the company at Everett, Wash.

R. C. Behaut succeeds H. L. Leonard as head of the Washington Suburban Gas Co., Hyattsville, Md. Mr. Behaut was formerly manager of the Alexandria and Rosslyn Gas Company. Mr. Leonard is now safety manager of the Washington Gas Light Company, Washington, D. C.

Henry A. Nordheim has been appointed manager of the Central Indiana Gas Company for Elwood, Alexandria, Frankton and Summitville.

Edward T. Stafford was recently elected secretary of the Washington Gas Light Company, Washington, D. C. He succeeds George M. Whitwell, who resigned.

Harry P. Burgwin has just been appointed Supervisor of Electrolux Refrigerator Sales for the Chattanooga Gas Company, according to announcement made by A. J. Goss, Vice President and General Manager of the company. Mr. Burgwin, who will head all refrigeration sales activities, will work under the supervision of Colonel C. E. Daugherty, Sales Manager.

Although Mr. Burgwin's connection with the gas company is fairly recent, he brings to his new position over three years of sales experience in automatic refrigeration.

E. Paul Young has been appointed assistant vice-president in charge of sales of the Central Public Service Company, Chicago, Ill.

C. L. Nelson has been placed in charge of the Mandan, N. D. office of the Montana-Dakota Power Company.

E. A. Olsen, formerly executive vice-president of the Oklahoma Natural Gas Corporation, Tulsa, Oklahoma, has been appointed president of the company. He succeeds E. C. Deal, now chairman of the board.

Obituary

A. J. PETERS

A. J. Peters, General Sales Manager of the Consolidated Gas Company of New York, and Chairman of the Industrial Gas Section of the American Gas Association, died suddenly at his home in Flushing, Long Island, on December 25.

Mr. Peters was born in Philadelphia, Pa., in 1891. From 1909 to 1919 he was engaged in railroad work, and during the World War was United States Railroad representative at Camp Dix, N. J. He entered the employ of the Consolidated Gas Company in 1920 as a ledger clerk. In 1922 he was made commercial manager of the New York and Queens Gas Company, and in 1925 was appointed assistant manager of the Consolidated General Office Appliance Division. In February, 1926, Mr. Peters was made manager of the Industrial Division of the Company, and in September, 1927, he assumed the duties of assistant general sales manager. Early in 1930 he was made General Sales Manager of the Company.

Mr. Peters was an active member of the American Gas Association having served on important committees of the Industrial Gas and the Commercial Sections. At the 1930 Convention in Atlantic City he was elected Chairman of the Industrial Section.

C. J. PRENDERGAST

C. J. Prendergast, Manager of Bailey Meter Company's St. Louis office was recently fatally injured in a building collapse at Paoli, Indiana.

Mr. Prendergast was in conference with four other men in a small two story office building when a section of the brick wall in a warehouse next to the office building suddenly collapsed and crashed through the roof of the smaller building. Mr. Prendergast was directly in the path of the falling material and was buried under considerable debris, although none of the other men were seriously injured. He was rushed to a hospital, where he died of internal injuries the following day.

After being graduated from Case School of Applied Science in 1925, Mr. Prendergast went directly into the employ of Bailey Meter Company at Cleveland, in whose employ he remained until his death.

TRADE NEWS

Instrument Lines Merge

The Pyrometer Division of the Wilson-Maeulen Company, Inc., has merged with The Foxboro Company. This action has followed twenty-five years of close and friendly cooperation between the two companies, and was made wholly in the interest of better service by thus being able to offer complete instrumentation to industry. The many users of Wilson-Maeulen Pyrometers will be served by a larger, more wide-spread group of instrument engineers.

The entire personnel of the Pyrometer Division of Wilson-Maeulen Company will be merged with that of The Foxboro Company. It is felt that this combining of the knowledge and experience of these two organizations will prove an important step in the progress of this industry.

This merger has a significance beyond that of greater facilities. The Wilson-Maeulen Company specializes in the manufacture of Electric Indicating, Recording and Controlling Pyrometers and Electric Resistance Thermometers for temperatures up to 3600° F. Thus, by including the outstanding Wilson Maeulen temperature instruments, The Foxboro Company can now offer a complete range of instruments of standardized quality.

The Rockwell Hardness Tester that has been manufactured by the Wilson-Maeulen Company will hereafter be built and sold by the Wilson Mechanical Instrument Company which succeeds the Mechanical Instrument Division of Wilson-Maeulen Company, Inc., and continues in the same factory and offices at 383 Concord Ave., New York City.

The Wilson-Maeulen Pyrometers and Controllers will be built in the modern, excellently equipped factories at Foxboro. All communications relative to Pyrometers should be addressed to Wilson-Maeulen Pyrometer Division, The Foxboro Company, Foxboro, Mass.

C. H. Lang Succeeds M. P. Rice As G. E. Publicity Manager

Chester H. Lang, formerly assistant manager of the publicity department and then comptroller of the budget of the General Electric Company, has been appointed manager of the publicity department to succeed Martin P. Rice, who retired December 31 after more than 37 years of service with the company.

Mr. Lang entered the employ of the General Electric Company in 1919. After three years as a traveling auditor he was made assistant manager of what was then the publication bureau, which later became the publicity department. He continued in this position until January, 1926, when he was appointed to the newly created position of comptroller of the budget of the company.

Mr. Rice, a graduate of the University of Pennsylvania, entered the employ of the General Electric Company in 1895. When the publication bureau was organized 35 years ago he was made manager, and with the consolidation of this bureau with the advertising department nine years ago he became manager of the publicity department.

J. H. Fisher Returns to Head of Fisher Governor Co.

At a special meeting of the Board of Directors of Fisher Governor Company, December 18, at their main office at Marshalltown, Iowa, Mr. Jasper H. Fisher, who has been associated with the company since 1912, was elected President and is now active head of the company. Mr. Fisher has, in his 19 years with the company, served as Secretary, President, and for the past two years as Chairman of the Board of Directors. He has, for the past few years, resided in California, but plans to return his family to Marshalltown in the near future.

Mr. L. W. Browne, who has been connected with the company for the past sixteen years and for the past two years as President, has resigned as President and member of the Board, but still retains a stock interest.

Olson and Clewell to Represent National Radiator Corp. in Middle West

Barney Olsen and Ray Clewell have opened offices in the Peoples Gas Building, Chicago, Illinois.

They will act as Middle Western representatives for the National Radiator Corporation's new gas boiler.

Mr. Olson started with the Peoples Gas Light and Coke Company as a bill deliverer in 1902 and later became a salesman of gas appliances. In 1915, he organized the Architects' and Builders' Service, which he left in 1922 to join the local office of the Bryant Heater and Manufacturing Company.

He severed his connection with that organization on September fifteenth.

Mr. Clewell started with the Peoples Gas Light and Coke Company after graduating from the University of Illinois in 1923. He later joined the C. A. Dunham Company as a member of the St. Louis salesforce.

He entered the Chicago organization of the Bryant Company in 1927, resigning on September fifteenth.

Both men have a wide acquaintanceship with the heating contractors and utility organizations of the Middle West.

W. C. Pinkerton Joins Foster D. Snell

W. C. Pinkerton has taken a position as Industrial Representative with Foster D. Snell, Inc. He was previously with the International Exposition Co.

New Appointments by General Refractories Co.

At a meeting of the Board of Directors of General Refractories Company, Philadelphia, Pa., held on Monday, December, 28, 1931, the following appointments were made: F. L. McManus, Vice President in charge of Traffic; D. M. Thorpe, Vice President in charge of Sales; L. Tschirky, Vice President and Assistant to President.

Henry H. Peck Joins Lukenweld, Inc., as Manager of Sales

Mr. Henry H. Peck, formerly with the Standard Steel Works Company of Burnham, Pa., has joined Lukenweld, Inc., Coatesville, Pa., as Manager of Sales. Mr. Peck for many years was associated with iron and steel foundries throughout the country, principally in the sale of castings. Lukenweld, Inc., is a division of Lukens Steel Company, and is engaged in the manufacture of arc welded rolled steel parts for all types of machinery and equipment.

Mr. Peck succeeds Mr. John S. Bleecker, formerly in charge of sales for Lukenweld, Inc. Mr. Bleecker has been appointed Manager of Sales Research and Advertising for Lukens Steel Company and its divisions, Lukenweld, Inc., and By-Products Steel Corporation.

New Bulletins Issued by Eclipse Fuel Engineering Co.

Eclipse Fuel Engineering Co., Rockford, Ill., have issued three new bulletins. Bulletin H-14-B describes a new blast tip known as the McKee "No-Blow" that burns any kind of gas or mixture of gases. Bulletin H-14-C describes a new blast tip for converting drilled pipe burners. Bulletin H-15-A amplifies page 5 of Bulletin H-15, and also describes and lists McKee Atmospheric compound Injectors.

Copies can be obtained upon request.

(*Trade News continued on page 68*)

How ROBERTSHAW
Adds New Interest to Your Appliance Department

WHEN WOMEN THINK about cooking these days, they think about a gas range with a Robertshaw controlled oven.

When they come to your appliance department, they expect to see the Robertshaw on most of the ranges you exhibit.

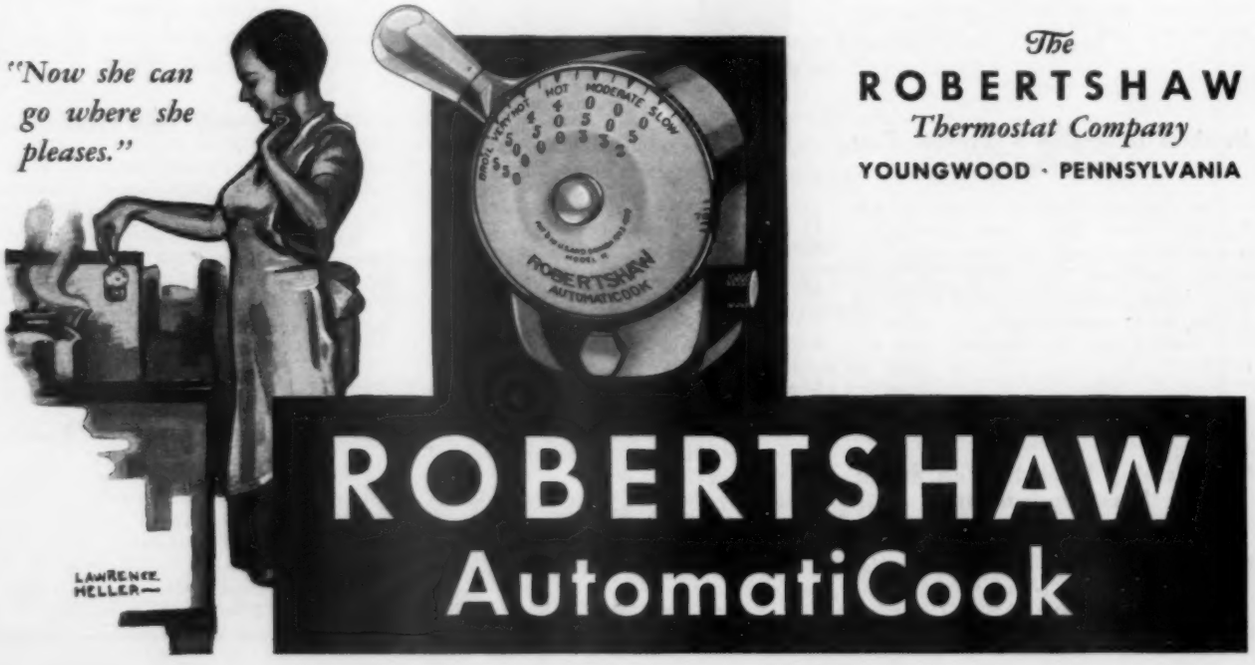
Robertshaw advertising in the national magazines, kept up year after year, has been a most powerful force in showing women that their present range is inadequate . . . that they are genuinely entitled to a *new* range, a *gas* range, and a range with the Robertshaw AutomatiCook oven control.

And remember, too, when you display Robertshaw equipped ranges you win the instant confidence of your customers.

Robertshaw leadership is convincingly demonstrated by the fact that the great majority of gas range makers use the Robertshaw as standard equipment.

Whenever a woman sees a Robertshaw on a range, she knows it means the last word in range service. She knows it assures correct oven performance . . that every dish she puts in the oven will come out exactly right.

The Robertshaw advertising and merchandising campaign this year is especially designed to help your appliance department. Let us tell you all about it.



The
ROBERTSHAW
Thermostat Company
YOUNGWOOD · PENNSYLVANIA

American Foundry & Furnace Co. Opens Chicago Office

The Gas Division of the American Foundry & Furnace Co., Bloomington, Ill., manufacturers of the American gas-fired June-Aire and the American gravity gas furnace, announced recently the opening of a Chicago office at 1025 Peoples Gas Bldg., 122 South Michigan Ave., under the management of Barney Olsen and Ray Clewell.

Maxim Offers Noise Consulting Service

The Maxim Silencer Company of Hartford, Connecticut, has established, as an addition to their regular business, a consulting service which will specialize in the solution of noise problems. It is headed by Dr. Hiram Percy Maxim, the inventor of the Maxim Silencer, and will have at its disposal the services of the entire engineering and research staffs of the Company.

New Rego Catalog Ready for Distribution

The Bastian-Blessing Company, 240 East Ontario Street, Chicago, makers of Rego Welding and Cutting Equipment, announce the completion of a new Catalog No. 57 and offer it to anyone having an interest in such equipment.

The Rego Catalog No. 57 is a pocket size booklet of 40 pages, indexed for ready reference. It lists specifications and prices of all types of welding and cutting Torches, Regulators, gas Economizers, Acetylene Generators and the various accessories. The chapters on "How to Make Up a Special Outfit," "How to Choose a Torch," and "Regulators Make the Outfit" are of especial interest to those concerned with gas welding or cutting.

Booklet Describes Universal Cast Iron Piping

The Central Foundry Company, 420 Lexington Ave., New York, have issued a booklet describing and illustrating Universal Dual-Lok Joint Cast Iron Pipe and Fittings, which is claimed to assure double safety against leakage. Copies of this booklet may be obtained upon request.

New Catalog Published on Steam Line Equipment

The 1932 Catalog of the American District Steam Company, North Tonawanda, New York, has just been published.

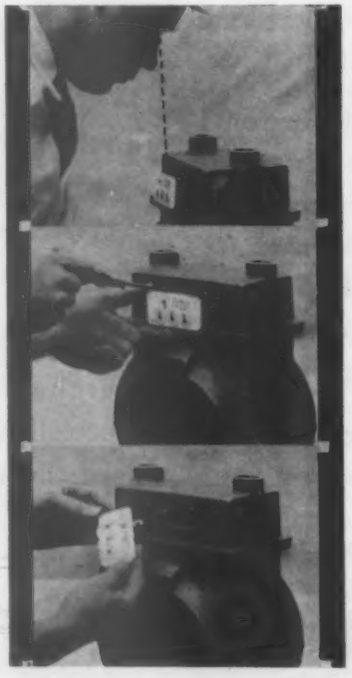
The Catalog covers ADSCO line of slip type and packless expansion joints, underground steam conduit, insulation and accessories, condensation and steam flow meters, water heaters, steam traps, separators, strainers, alignment guides and allied specialties for underground steam and hot water lines.

Large, clear illustrations and exhaustive technical reference on the product make the book extremely comprehensive.

New Sprague Meter Co., Instruction Book

The Sprague Meter Company, Bridgeport, Conn., has just brought out a new manual that all but talks. It sets a new pace in industrial education and could well be used as a model for future instruction books.

Evidently the editors of this work have profited by the wisdom of the old Chinese proverb that "one good picture is worth more than ten-thousand words" for this



manual is replete with pictures arranged in the same sequence as those in a movie film and as far as possible the reading matter has been synchronized with the illustrations in order to closely approximate the effect and interest of a talking picture.

The work has been designated as "Sprague Manual No. 17" and has been dedicated to engineers, superintendents, meter shop foremen and repair men interested in the art of meter making and maintenance.

Not only does the manual contain detailed instructions as to the maintenance of their own products but other valuable information that will be of interest to gas men.

A copy of the Manual will be mailed upon request.

New Bulletin on Gravity Recorders for Liquids

Bulletin No. 192, just issued by Bailey Meter Company of Cleveland, Ohio, describes Bailey Gravity Recorders for Liquids. It illustrates how the Bailey Gravity Recorder continuously records the specific gravity of a liquid and automatically corrects its record for variations in the temperature of the liquid.

While this recorder may be used to record the specific gravity of practically any solution, it finds its principal uses in oil refineries, sugar refineries, salt works, textile plants, and paper mills.

In addition to illustrating and explaining the theory and operation of the recorder itself, this bulletin also explains how the Bailey Meter Automatic Control system may be applied to maintain the specific gravity of a liquid constant.

New Worthington Catalogs

Below is a list of new catalogs, bulletins, etc., released by the Worthington Pump and Machinery Corporation. If desired, a copy of any of the following will be sent upon application to the Publicity Department, Harrison, N. J.

Power Pumps, horizontal-duplex-piston pattern; cap and valve plate; type D-2437—for general service; 6-inch stroke, inclosed crankcase, self-oiling. Capacities, sizes and description. Specification Sheet No. D-412-S6, 2 pages.

Specifications for steam-air ejector; two-stage, condensing, combined surface intercooler and aftercooler type—double unit. Specification Sheet No. W-205-S1A, 4 pages.

Specifications for steam-air ejector; two-stage, condensing, combined surface intercooler and aftercooler type—single unit. Specification Sheet W-205-S2. 4 pages.

New Greenlee Tool Folders

The Greenlee Tool Company, Rockford, Ill., have recently issued a booklet on their new Hydraulic Pipe Pusher. This pusher is fully described and illustrated. One of the features of the pusher is that it can be operated by one man. They have also issued a pamphlet describing the Greenlee line of demolition tools.

New Thermo Safety Pilot Folder

The Milwaukee Gas Specialty Company, Milwaukee, Wis., have just issued a folder describing the special features and uses of their Thermo-Safety Pilot for all types of gas-fired appliances. It is furnished in three styles—a Thermo Electric Safety Pilot, a Thermo-Pressure Safety Pilot and a plain pilot.

A Book for Every Gas Man's Library

BOUND IN SEAL GRAIN STURDITE FABRIC

Price $2.50

This book presents first-hand facts and data, profusely illustrated, concerning every type of domestic appliance which uses gas as a fuel, and is of special interest to gas men interested in the sale of such appliances. Mr. Apmann has made an intensive study of gas utilization and therefore writes authoritatively on this subject.

Listed below are the chapter titles of the book which are indicative of its comprehensive scope. A list of pertinent questions on each chapter will be included, which adds to its value as a real text book on **Selling gas appliances.**

I. Competitive Fuels
II. Manufactured and Natural Gas
III. Comparative Fuel Costs
IV. Capacity of Pipes, Meters and Gas Orifices
V. Appliance Installation
VI. The Gas Range
VII. Gas Range Accessories
VIII. The Gas Water Heater
IX. Water Heater Accessories
X. Gas for Househeating
XI. The Househeating Furnace and Accessories
XII. Calculating Househeating Requirements
XIII. Miscellaneous Househeating Considerations
XIV. Space Heaters
XV. The Health Givers of the Cellar, Incinerator and Laundry Equipment
XVI. Gas Refrigeration
XVII. The Future of Gas Utilization

AMERICAN GAS JOURNAL
53 PARK PLACE NEW YORK

P. L. Maury Appointed President of Arco Co.

The Arco Company, manufacturers of paints, varnishes, enamels, and lacquers, with general offices at Cleveland, Ohio, and plants in Cleveland, Los Angeles, and Toronto announces the appointment of Mr. Philip L. Maury as President—Mr. S. D. Wise, President and Mr. S. D. Weil, Vice President retiring.

Mr. S. D. Wise entered the employ of the Arco Company in 1889 as office boy and within twelve years was President, which position he held up to the present time.

The new President, Mr. Philip L. Maury, has had long experience in the paint industry. He formerly lived in Cleveland when he was connected with the Sherwin-Williams Company, as Manager of General Industrial Railway and Marine Sales.

He left Cleveland to become Vice President and General Sales Manager of the Detroit Graphite Company at Detroit, and continued in that capacity until the Company merged with Valentine & Company when he became Vice President of that concern at New York.

Mr. Maury resigned from Valentine & Company November 30, to take up his new duties with the Arco Company, December 1.

New Industrial Sales Staff

The Caterpillar Tractor Co. has given the name of Special Sales Division to the group of Sales Engineers who are contacting railroads, public utilities and equipment manufacturers. This division supplements the work of the dealer organization by reaching headquarters offices of the larger buyers being in some ways similar to the "fleet sales divisions" of the larger automotive manufacturers.

Mr. W. J. Dukes has been appointed manager of engine sales and Mr. Harold G. Tufty is the newly chosen Manager of Sales to Public Utilities.

Brown Flame Analyzer Bulletin

Bulletin No. 11, issued by the Brown Instrument Company, Philadelphia, Pa. describes the application of The Brown Flame Analyzer in coal gas plants. A typical installation of the flame analyzer equipment is shown schematically on page 3 of this pamphlet.

Copies of this bulletin can be obtained upon request.

Booklet Issued by Foster D. Snell

"The Consulting Chemist and Your Business" is the title of a booklet recently issued by Foster D. Snell, Inc. The booklet, 6½ x 9½ inches in size, printed on coated paper stock, outlines the nature of the services rendered by the company. Copies will be mailed to any interested party upon request to Foster D. Snell, Inc., 130 Clinton Street, Brooklyn, N. Y.

Electrolux Activities

Several new appointments in the Electrolux sales organization of the Indiana properties of the Central Public Service System have been announced by W. J. Tenbusch, General Sales Manager in charge of Indiana and Michigan regions.

Robert M. Conway is now special Electrolux sales representative for the Central Indiana Gas Company at Anderson, while Robert J. Zeller has been appointed in a similar capacity for the Central Indiana Gas Company at Muncie. Both Salesmen Conway and Zeller have had long and successful experience with Electrolux and a bright future is predicted for them in their new positions.

Sales of Electrolux Refrigerators are proving a real boon to a number of plumber-dealers in California who rely upon appliance merchandising for a substantial share of their business. In spite of generally poor business conditions, gas refrigeration is holding up remarkably well.

Over 230,000 residents of Southern California were interested visitors at the 1931 Los Angeles County Fair held at Pomona recently. Exhibitions and displays demonstrating the various products of the county attracted thousands.

The booth sponsored by the Southern Counties Gas Company, the Southern California Gas Company, and the Los Angeles Gas and Electric Corporation was the center of many interested groups during the entire fair which lasted ten days.

C. G. Spencer, Pomona District Manager for the Southern Counties Gas Company, under whose supervision the booth was operated, stated that it was instrumental in showing the Gas Refrigerator to thousands who would otherwise be unfamiliar with its efficiency, beauty and economical operation.

The Electrolux Refrigerators on display at the cooperative booth were connected and operating for demonstration purposes. Each day they were filled with fresh tempting dishes which were served to visitors.

The well-known firm of J. Lyons & Co., Ltd., London, England, caterers, have just placed an order with Electrolux, Ltd., for 1,000 Electrolux Refrigerators for the conserving of ice cream. This is the third order for such refrigerators which Messrs. Lyons have placed with the company, the two earlier orders being for 500 and 700 refrigerators respectively. When delivery is effected they will have not less than 2,200 Electrolux Refrigerators for the conserving of ice cream all of which with but few exceptions are gas heated.

That dealer-cooperation is successfully being undertaken by the Brooklyn Union Gas Company is evidenced by the fact that dealers' net purchases of appliances for the first nine months of this year surpass their net purchases for the twelve months of 1930.

For the nine months of 1931, ended September 30th, dealers' purchases totaled $263,608. For the 12 months of 1930 dealers' purchases amounted to $239,596. This shows an increase of more than $23,000.

Comparing the first nine months of this year with the corresponding period of 1930, dealers' purchases show an increase of more than $100,000. The purchases for the nine months ended September 30, 1930, total $158,869.

While dealers' purchases show a large increase, sales through dealers' prospect leads show a greater increase. Appliance sales resulting from dealers' leads for the first nine months of this year total $163,855 or more than $83,000 greater than for the corresponding period of 1930. This year's figure also surpasses the total of appliances sold through dealers' leads during the twelve months of 1930. The figure for this latter period is $125,878.

The dealers' purchases for September were the greatest since the advent of dealer-cooperation, totaling $53,520. The previous high record month was October, 1930, when $36,311 worth of appliances were purchased by dealers. More than half of the September total resulted from Electrolux Refrigerator purchases. Of the $53,520 over $36,495 represents refrigerator purchases by dealers. This refrigeration figure alone exceeds the total dealers' purchases for any month since the advent of the cooperative movement.

The increasing value of Electrolux Gas Refrigeration for semi-commercial purposes has again been clearly demonstrated by the Sheboygan office of the Wisconsin Public Service Corporation.

In attempting to sell an Electrolux Refrigerator to a Mr. Hirsch, it was found that this gentleman was the operator of a small bakery. Not only did Baker Hirsch wish a refrigerator for the storage of his family foodstuffs, but he also desired something for cooling the yeast used in the bakery.

According to C. A. Debell, Superintendent of Merchandise Sales, the salesman quickly convinced the baker that a larger model, the EA-10A, would easily serve both purposes. Now a handsome Chateau Model is being proudly exhibited in the Hirsch kitchen.

The McCrery Music Shoppe, Electrolux dealers in Long Beach, Cal., report that refrigeration business is good. They estimate that during the last two months they have secured orders for Electrolux Refrigerators on 25 per cent of the residences for which building permits have been issued. The company has also been virtually assured of having Electrolux Water Coolers specified for the new building being constructed by the City of Long Beach for its gas and water department.

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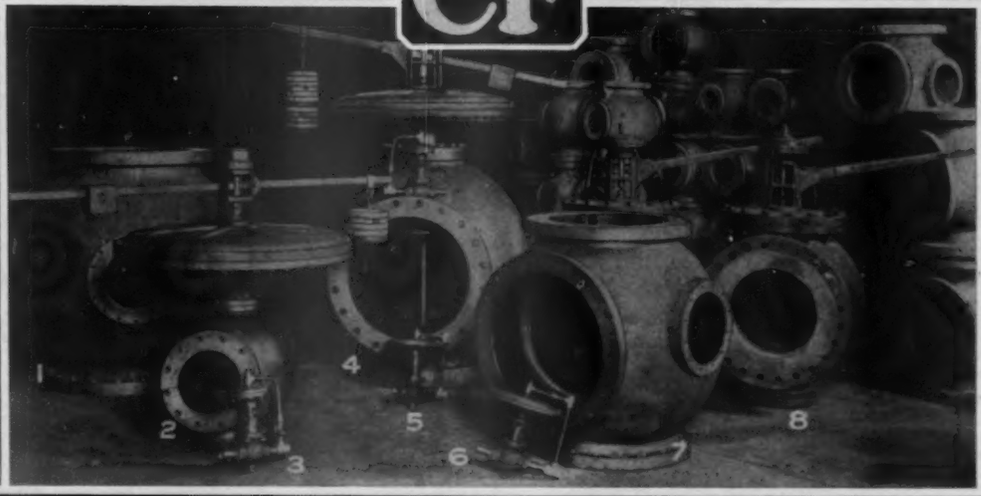

5 ONE-INCH HOUSE REGULATOR.

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8 A SIXTEEN-INCH HIGH PRESSURE REGULATOR.

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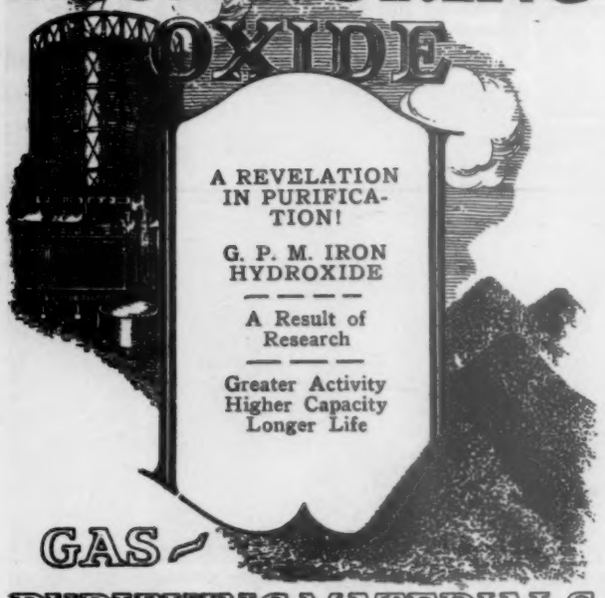

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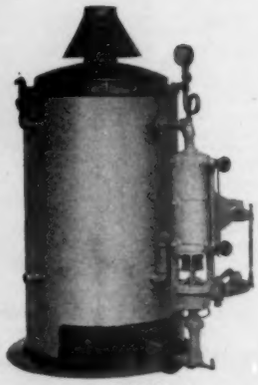

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